NetworkWorld

THE NEWSWEEKLY OF ENTERPRISE NETWORK COMPUTING

NetworkWorld
TECHNICAL SEMINARS

1998 Seminar Dates and Locations:

April 6	Washington, DC
April 7	Philadelphia, PA
April 22	Atlanta, GA
April 23	Dallas, TX
May 12	Chicago, IL
May 13	Minneapolis, MN
May 19	Boston, MA
May 20	New York, NY
June 9	Newport Beach, CA
June 10	San Francisco, CA

Directed and presented by
Daniel Blum
Rapport Communication

Attendees Will Learn How To:

1. Anticipate and profit from key Internet/intranet messaging, groupware, and electronic commerce technology trends
2. Demystify the Internet messaging and directory standards (such as IMAP, LDAP, S/MIME) and understand major vendor's messaging and directory product programs
3. Build a messaging directory and integrate it with your corporate LDAP, X.500, or metadirectory
4. Close dangerous security holes, block spammers, and enforce security policies as well as practice safe messaging using PGP or S/MIME
5. Use Internet e-mail and directories to support electronic commerce and business-to-business communication
6. Learn what messaging, directories, and groupware should cost and how to project/assess your costs
7. Follow best practices for messaging deployment, management, administration and help desk

Next Generation MESSAGING

Best Practices for Internet E-mail, Directories and Groupware

Seminar Course Overview:

Enterprises across the world are eager to capitalize on Internet client/server e-mail as a universal infrastructure utility for supporting vital groupware and electronic commerce applications. However, neither monolithic proprietary mail systems nor yesterday's shareware mail packages can successfully support very high volume, extremely mission critical applications on your intranet, extranets, or the Internet at large.

Next Generation Messaging will help you decide what services you need from Internet messaging and intranet infrastructure applications such as directories, groupware, and workflow, and what benefits your company can expect from upgrading to the latest standards and technologies. You will learn how, when, and why to deploy products supporting new standards like Multi-purpose Internet Mail Extensions (MIME), Internet Message Access Protocol 4 (IMAP4), Extended Simple Mail Transfer Protocol (ESMTP), the Lightweight Directory Access Protocol (LDAP), and Secure MIME (S/MIME).

Whether you are just starting the migration to Internet and client/server messaging or have already begun, this seminar will cover best practices for evaluating and selecting messaging products, lowering cost of ownership, and migrating from legacy mainframe or LAN e-mail systems to client/server messaging systems.

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Your Seminar Outline

Introduction: E-mail Explodes

Along with the Web, e-mail is the killer application of the Internet. With well over 150 million users worldwide and adoption spreading rapidly, e-mail is a mission critical, competitive necessity for the modern enterprise. This section briefly reviews key e-mail history and trends, establishes basic Internet client/server messaging architecture definitions, and identifies the key requirements and considerations necessary for you to implement a messaging strategy.

- Key messaging trends/background
- Basic architecture: Why Internet client/server?
- Important user requirements
- Internet/intranet messaging, directories, and groupware/workflow directions
- Key strategic decisions

The Open Architecture

One of the reasons Internet client/server messaging is so successful is the variety of standards for open protocols between the client, server, directory, and other components. This section will help you rapidly understand the basics of client/server messaging architecture, and prepare you to evaluate and mix and match different classes of products or services.

- Open Client
- Protocols: POP3, IMAP4, SMTP, MIME, LDAP
- Scalable message store server
- Message Switch or MTA
- Domain Name System (DNS)
- Best practices for interconnecting message store servers, message switches, gateways, and directories within your intranet
- Best practices for extranet and Internet messaging connectivity
- Market directions, vendor positioning
- Key vendor programs and product examples

Harness and Extend Messaging's Power

A manageable open messaging infrastructure does not stand alone, but rests on the pillars of your enterprise directory, security, and management systems. This section will describe best practices for deploying these infrastructures, contain costs, and enable a scalable, flexible, and highly responsive messaging system that integrates cleanly with groupware, electronic commerce, and Web applications on your intranet or extranets.

- Directory standards: LDAP and X.500
- The role of directories in intranets, network management, and future applications
- Using directory synchronization and metadirectories
- Security Services: Signed, sealed, delivered
- Crypto concepts and the ASCII armor: S/MIME or PGP?
- Supporting remote users, blocking viruses and spammers
- Management tools and techniques: SNMP, mail monitoring, message tracking, mailing lists, and more
- Integrating messaging with web-based groupware, electronic commerce, and other intranet applications
- Use of messaging servers, web servers, and directories in a three-tier, component-based enterprise architecture
- Emerging technologies such as wireless, e-mail/voice mail, convergence of SMTP with transactional messaging
- Key vendor programs and product examples

Best Practices for Messaging and Related Intranet Applications

For the typical enterprise, messaging is the largest and most complex application ever deployed. It crosses all the organizational, geographical, and computing boundaries. It is also closely tied to various other applications and infrastructures in your intranet. This section concludes this seminar by discussing proven technical and business strategies for managing and deploying your messaging environment. It will discuss proven methodologies for obtaining organizational consensus/buy-in to deploy high-function, cost-effective messaging systems.

- Overview of Rapport's Messaging Implementation Methodology
- How to define your messaging architecture and requirements
- How to manage the procurement process
- How to estimate and justify messaging costs
- How to set performance measures, maintain service levels, and provide cost-effective support to enable a high-value service to customers
- How to migrate from proprietary to open messaging
- How to define a messaging management strategy
- How and why to define a privacy policy for e-mail
- How to use e-mail with extranets to enable trading partners in your supply chain
- How to develop a groupware/workflow plan to enable distributed teams
- E-mail and telecommuting

Register and You Will Receive . . .

- Comprehensive Seminar Workbook
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About the Seminar Presenter . . .

Daniel J. Blum is an internationally recognized expert consultant, writer, and instructor on electronic messaging, directory services, groupware, and electronic commerce. He has worked with key standards development committees, implemented messaging and directory systems, and conducted extensive surveys of industry products. He advises industry and government users on the planning, architecture, procurement, and deployment of modern networks and value added messaging services based on multiple technologies including Internet Mail, LDAP/X.500, metadirectories, secure messaging, groupware, SMTP/X.400 messaging backbones, and electronic commerce.

Blum has spoken at numerous trade conferences and his articles appear regularly in industry publications including *Network World*. He has served as Track Chair at Internet Expo and Electronic Messaging Association conferences, and currently is the Vice Chair of the EMA Directory Committee. He is currently writing a book *Understanding Microsoft Active Directory Services*. He is the co-author of the book, *The E-Mail Frontier*, published by Addison-Wesley in July, 1994. Other publications include *Decision '96: A Critical Evaluation of the Hewlett-Packard, Lotus, Microsoft, and Novell client/server messaging/groupware product line*, and hundreds of white papers, articles, and columns. In 1997, Dan taught the highly popular Network World Technical Seminar, Next Generation Messaging.

Blum is a Principal at Rapport Communication. Rapport provides consulting, education, and publishing to users and suppliers in the fields of electronic messaging, directories, and information exchange.

IDG.net

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NetworkWorld

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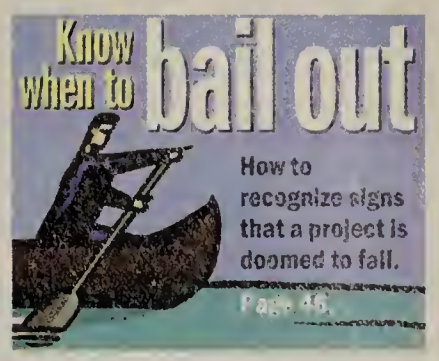


Nortel enterprise bid includes gigabit gear

By John Dix

Start-ups don't usually pop out of the box with 3,500 employees and revenue in the hundreds of millions, but that's essentially what Nortel's new Enterprise Data Networks unit did.

Officially formed last month, the new business unit is charging after the likes of Cisco Systems, Inc., 3Com Corp. and Bay Networks, Inc. with bold plans for gigabit campus backbone products and wide-area ATM gear designed to appeal to users with aging T-1 and sagging router nets.

Given Nortel's heritage as a supplier of carrier equipment, the wide-area ATM approach isn't much of a leap. But it comes as something of a surprise that Nortel would turn its back on its ATM knowledge and investment when formulating plans for the enterprise campus data market.

"It's too late for ATM in the campus," said Albert Delorenzi, vice president of technology and business development for the new unit. "That market will level off or die. When you look at industry investment in Gigabit Ethernet, you can only conclude

See **Nortel,** *page 14*

CHRISTOPHER FITZGERALD

Is Novell on the comeback trail?

Second consecutive profitable quarter impresses some, but doubters remain.

By Christine Burns

San Jose, Calif.

Wall Street analysts last week stopped short of crowning Novell, Inc. CEO Eric Schmidt the Comeback King. But based on Novell's latest financial results, his company may be turning the corner.

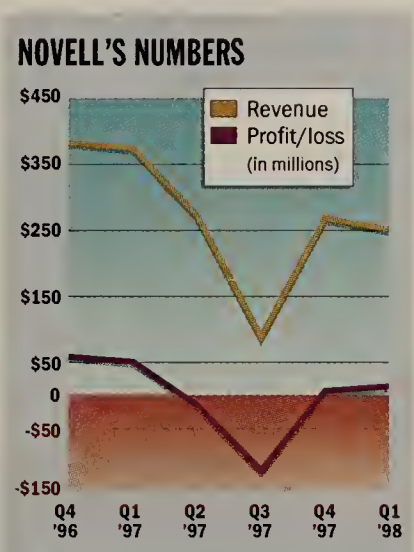
Novell posted earnings of $14 million and revenue of $252 million for its fiscal first quarter, marking the company's first operational profit since Schmidt took the reins last April. Earnings per share weighed in at 4 cents, twice what Wall Street analysts were anticipating.

"They're only halfway to what I would call a complete turnaround," said Stephen Dube, an analyst with Wasserstein Perella Securities, of New York, who raised his stock recommendation from "hold" to "moderate buy" based on Novell's results. "But these numbers show they've beaten down the first few obstacles to getting there."

This technically is the company's second consecutive quarter in the black. However, last quarter's $7 million gain was only a result of income earned from the $1 billion Novell has in the bank.

Novell's return to profitability is a crucial step for the company as it seeks to repair its battered image. For the past couple of years, Novell has been whipped by Microsoft Corp. Microsoft has not only won on the Internet front, but its Windows NT Server has dethroned NetWare as the best-selling server operating system.

See **Novell,** *page 56*



Novell's fiscal year ends Oct. 31.

GroupWise getting a face lift

Novell plans to unveil e-mail/groupware upgrade at user conference. Page 56.

Coming soon: A spam ban in a can

By Paul McNamara

Colorado Springs

Looking for a way to block up to 95% of spam you are assaulted with every day? A new antispam device coming this month from Berkeley Software Design, Inc. (BSDI) just may be the ticket.

The company's BSDI Mail Filter sits on a corporate Internet access link between the firewall and e-mail servers and picks off junk messages.

The box will give companies a single point of control over antispam efforts. Existing spam filters reside on every firewall, e-mail server or client, and can be tedious to maintain, especially in heterogenous environments.

BSDI will also offer a subscription service that will automatically update the device over the Internet, adding addresses of newly detected spammers and fresh filtering intelligence.

The box works with any Simple Mail Transfer Protocol-enabled e-mail server and is easier to install, configure and keep loaded with the latest antispam measures than other filters on the market, according to Rob Kolstad, CEO of BSDI.

"We believe that people want to buy single-function boxes that nail a problem," Kolstad said. "[The Mail Filter] is just a box; no monitor or keyboard."

See **Spam,** *page 56*

more online: www.nwfusion.com

- Tips and software for filtering spam at the client level
- A look at keeping spammers from hijacking your SMTP server

Cabletron honcho's big plans

By Robin Schreier Hohman

Rochester, N.H.

In the six months since Don Reed took over as Cabletron Systems, Inc.'s CEO, one thing has become perfectly clear: This is no longer Bob Levine's Cabletron.

Fresh from acquiring Digital Equipment Corp.'s network organization and routing switch start-up YAGO Systems, Inc., Reed said he now is on the prowl for companies that can help Cabletron leapfrog its three largest internetwork rivals. He's eyeing software vendors that can extend the company's Spectrum network

See **Cabletron,** *page 57*

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Introducing Microsoft® Exchange Server 5.5, with new features that make it, now more than ever, the right messaging platform for enterprises that know communication and collaboration are mission-critical. Leading the list is an unlimited message store. Now, the number of seats you support on a single server, and the amount of data you host, are limited only by your hardware. Then there's interoperability. Exchange Server 5.5 has built-in connectors for easy co-existence and file sharing with other mail systems. And to provide a rich user experience that includes cross-platform calendaring, Microsoft Outlook,™ the messaging and collaboration client, now runs on a range of desktops—whether they're talking Win32®, Win16 or Macintosh®.

The result? You can standardize messaging across your diverse computing environment. Today, leadership is measured by an organization's communication reach, not just its numbers. That's why Microsoft Exchange Server 5.5—with its scalability, interoperability and consistent user experience—is the right messaging platform for any organization that thinks big.

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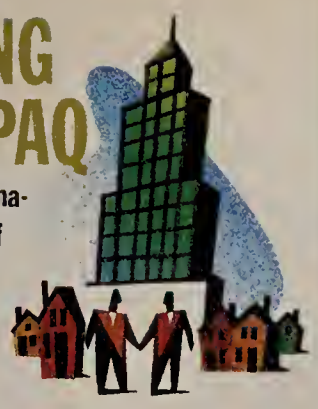
GUSSYING UP GROUPWISE

Novell readies a revised version of its e-mail/groupware software for an unveiling later this month. Page 56.

THE BUILDING UP OF COMPAQ



Columnist Linda Musthaler analyzes Compaq's acquisition of Digital. Page 37.

CISCO'S VPN VISION

Cisco's new dial access concentrator should help ISPs deliver better VPN services. Page 25.

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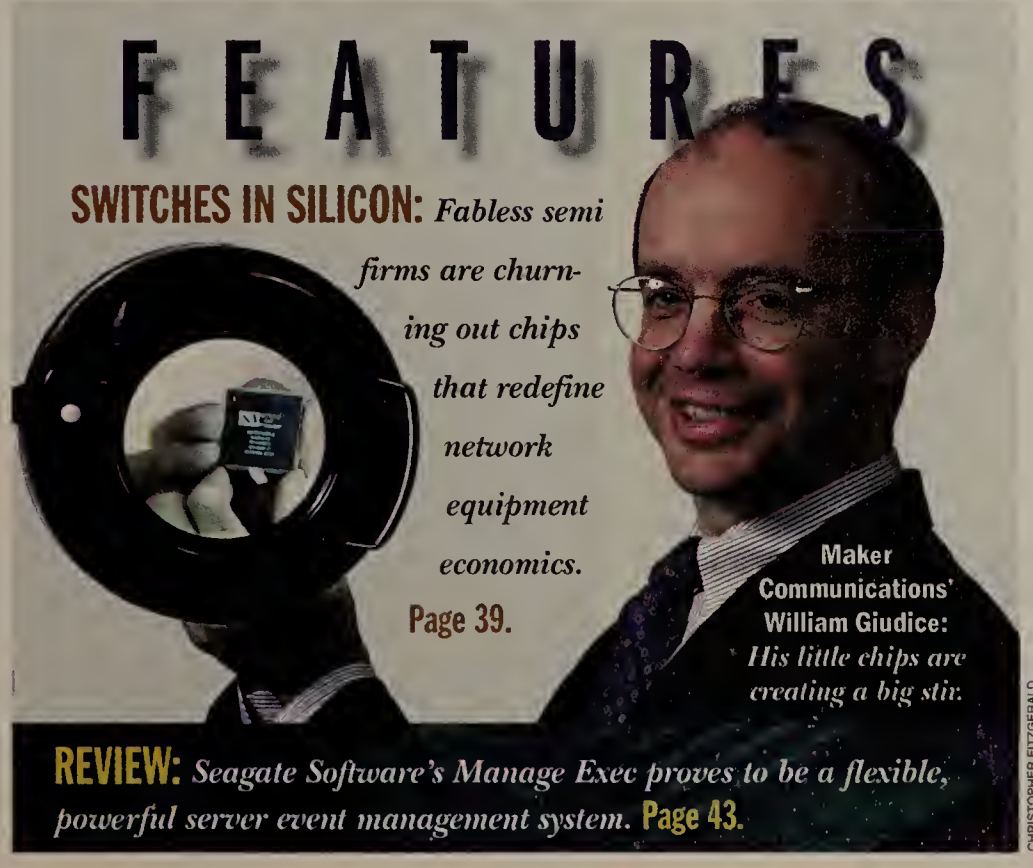

SWITCHES IN SILICON: *Fabless semi firms are churning out chips that redefine network equipment economics.* Page 39.

Maker Communications' William Giudice: *His little chips are creating a big stir.*

REVIEW: *Seagate Software's Manage Exec proves to be a flexible, powerful server event management system.* Page 43.

CHRISTOPHER FITZGERALD

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- Frame relay
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- Network/systems management
- Groupware/messaging
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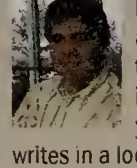
Daily news. We've also started an e-mail version of our daily NetFlash report on breaking network news. Five days a week, you'll get summaries of the top news, along with links for more detailed reports. **DocFinder: 6044**



Keeping Current. You go online and you're confronted with all these blinking, flashing, conflicting ads. It's almost enough to drive you to drink, Fred McClimans writes in a look at truth in online advertising. **DocFinder: 6045**

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News briefs, March 2, 1998

Clinton wants moratorium on Internet taxes

President Clinton last week urged the U.S. Congress to pass the Internet Tax Freedom Act, proposed legislation that would establish a five-year moratorium on new Internet taxes. The moratorium would allow a bipartisan committee made up of elected officials, business leaders, consumers and Treasury Department officials to further study the Internet taxation issue and build a domestic and international consensus, Clinton said. "We can't allow unfair taxes to weigh down the Internet, the most promising new economic opportunity in decades," he said.

President Clinton

The Sybase shuffle

Struggling database software vendor Sybase, Inc. last week reorganized its top management and announced the laying off of 10% of its 6,000-person work force. Chairman and CEO Mitchell Kertzman said he now will share the CEO title with President John Chen as part of the company's comeback plan. In addition, Sybase announced it will repurchase up to $25 million worth of outstanding common stock and take a $70 million restructuring charge against earnings in an attempt to return itself to profitability. The company, which posted a $55.4 million loss for 1997, plans to refocus on building Web-based and data warehouse products.

Netscape delays all-Java browser

Netscape Communications Corp. confirmed that it has put its all-Java "Javagator" browser on hold, which will give the company time to assess the project with its partners. While Netscape wouldn't name its partners in Javagator, industry reports tap Sun Microsystems, Inc. and IBM as likely technology mates. Jim Hamerly, vice president of client products at Netscape, said that there is no projected public release for the product.

Kennard scolds long-distance carriers

Federal Communications Commission Chairman William Kennard last week demanded that AT&T, MCI Communications Corp. and Sprint Corp. explain why they are passing along to users new fees imposed on the carriers to pay for universal service subsidies. Kennard said the fees should be more than offset by per-minute rate reductions resulting from FCC-mandated cuts in local-carrier access fees. Long-distance carriers should not be claiming on telecom bills that the FCC has ordered them to charge customers extra to pay for expanded universal-service programs, Kennard said.

FCC's *Kennard*

Acacia to make noise

Switch maker Acacia Networks, Inc. next week plans to outline its product strategy at an investors conference in San Francisco. The Lowell, Mass., company, which has been quiet for months on the product front, will discuss ChassisBuilder, its new term for tying together up to seven stackable 10M/100M/1000M bit/sec switches to create a virtual chassis switch. The company also will describe two new products — a 10M/100M bit/sec workgroup switch and a 100M/1000M bit/sec backbone switch dubbed the TeraSwitch.

Microsoft Network takes a hit

Microsoft Corp. last week said it is further scaling back its struggling flagship online service. The company said it plans to stop producing its own entertainment programming for the Microsoft Network and cut 40 jobs. Microsoft Network's growth has sharply lagged that of the largest online service, America Online. While MSN ranks second, its membership was stalled at 2.3 million last May before Microsoft stopped disclosing subscriber figures. By contrast, AOL now claims to have 11 million subscribers.

Cisco crafting NetView mgmt. pack

By Marc Songini and Jim Duffy
Anaheim, Calif.

Cisco Systems, Inc. soon will unveil software that provides users of IBM NetView with more detailed management of Cisco routers.

This summer, Cisco will roll out CiscoWorks Blue Internetwork Status Monitor (ISM), an enhanced version of its mainframe-based software for managing routers from mainframe-based NetView. Cisco previewed ISM for IBM users at the SHARE Technical Conference here last week.

ISM lets SNA users retain their investments in NetView while reducing management operations costs as they add support for TCP/IP nets, Cisco claims.

ISM is an upgrade of Cisco's Native Service Point (NSP) 2.0 software, which also allows NetView users to manage routers from the mainframe. ISM, though, provides more detailed router management than users currently get from NSP, said Hal Liberty, network management engineer at Cisco's InterWorks business unit.

ISM runs on IBM MVS mainframes alongside NetView Version 2 and later. It functions as a NetView service point, which, in IBM parlance, means it can manage non-IBM devices.

Features of Cisco's ISM

- Router management from mainframe NetView
- Interface status panel
- CIP management
- Session monitoring
- Event log

The software uses NetView RUNCMDs and IBM's Network Management Vector Transport protocol to get information from the routers.

Users can statically define routers in ISM, or ISM can discover them automatically when NetView receives an alert from a previously unknown router.

"It's great," said a user from a large insurance company in Hartford, Conn. "Usually we have to Telnet into the router to look at it, and that gets ridiculous. Now we have just one place to look for the performance status of our routers."

The performance of the channel interface processors (CIP) in those routers can be monitored as well. CIPs attach routers to IBM mainframes.

Previously, NSP only allowed users to view CIP channel interface statistics as if they were just another router interface.

But with ISM, users now can discover CIPs and build a database of CIP-specific information for more proactive monitoring and fault avoidance.

Users can collect IP packet error reports and view transport layer status information from CIPs. ISM also will alert users when CIP CPU and memory utilization reach a critical threshold, Liberty said.

ISM will be available in July for $15,000. ■

3Com outlines voice plan

Three-phase plan will give company a voice makeover.

By Tim Greene
Santa Clara, Calif.

3Com Corp. this week will announce its three-phase strategy for upgrading gear to support voice, video and data over a single packet network.

The company's so-called Multi-Service Evolution strategy relies on current and pending features of its Superstack II Remote Access, Total Control and AccessBuilder remote access boxes, as well as its CoreBuilder switches. The company was closemouthed about when specific features will be added to the three chassis lines.

Anchoring the Multi-Service Evolution will be new products 3Com is developing with Siemens Corp. Siemens and 3Com last summer announced they would integrate 3Com's CoreBuilder with features of Siemens' Hicom products. Hicom combines hardware and software and adds public telephone network call features such as call forwarding, call transfer and conference calling to private networks.

Phase 1 of 3Com's strategy involves migrating voice traffic onto enterprise wide-area data networks to get rid of some dedicated voice lines and avoid paying phone tolls. That also lets customers get used to integrating real-time traffic such as voice on their networks, 3Com said.

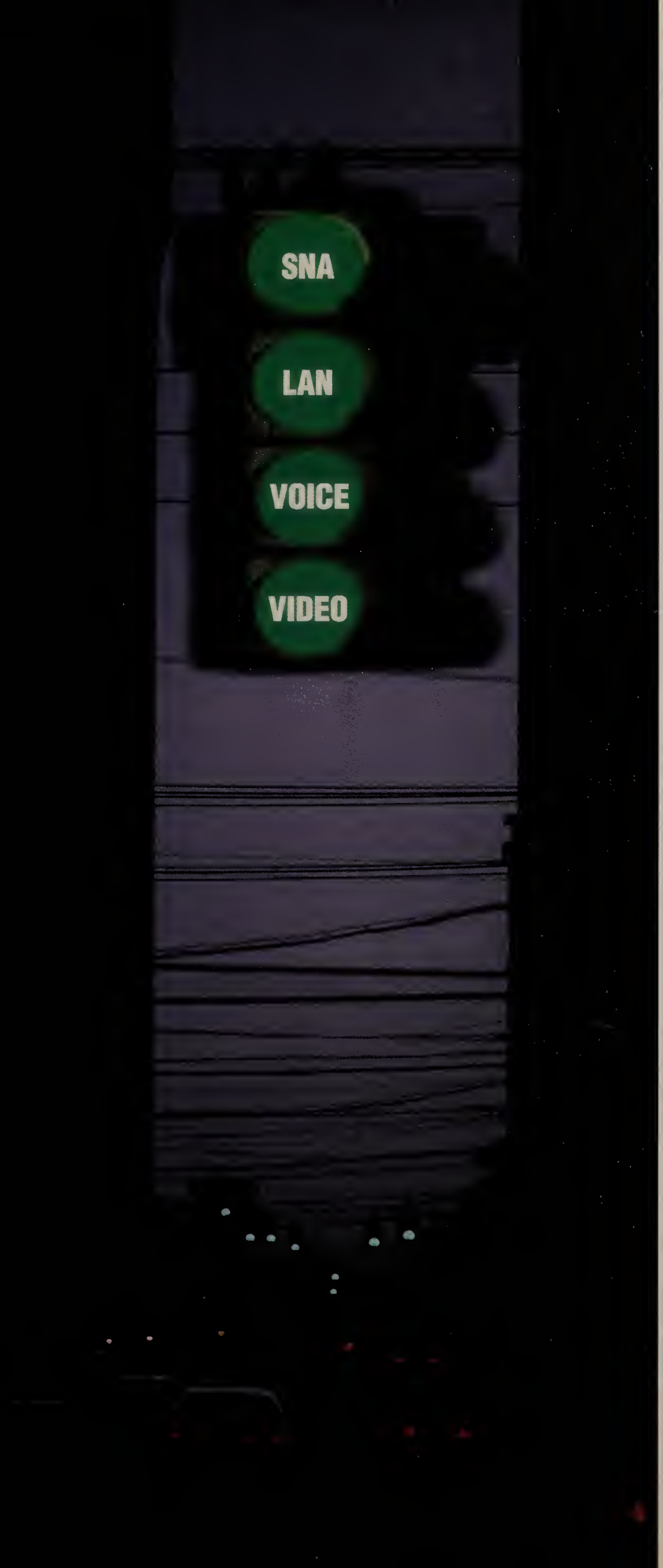
Phase 2, which starts next year, will add more intelligence to the access gear so it can handle calls to and from the public phone network.

Call management, call processing and other switching intelligence will be incorporated in the boxes so an Ethernet phone call, for example, can be routed to a PBX-attached phone.

Phase 3, slated for the second half of 1999. It will allow users to run voice over Ethernet LANs and integrate that traffic with frame relay, ATM and leased-line data traffic as well as the public telephone network.

Integrating different traffic types onto one network is a way to save money as well as support new services, said Tom Noto, IS manager for Station Casinos, Corp., in Las Vegas.

Running voice over an ATM backbone supported by 3Com gear already saves the company $400,000 per year by getting rid of voice trunks, he said. ■



Give All Of Your Applications The Green Light

Directing traffic on the wide area network used to be simple: SNA always had the right-of-way. But now, thanks to Frame Relay and ATM, voice and video applications can share the WAN with legacy and LAN data. The trick is to give them all the right-of-way when they need it.

That's where Hypercom comes in. Hypercom's Integrated Enterprise Network (IEN)™ keeps your legacy, LAN, voice and video safely flowing on your branch network. IEN WAN access equipment and IENView™ network management solutions will get your network up to speed and keep all of your applications moving through green lights.

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Telcos tussle with feds over surveillance

Attorney General Janet Reno threatens to prosecute companies that disobey government orders.

By Ellen Messmer
Washington, D.C.

U.S. Attorney General Janet Reno has told the network industry's most powerful equipment and service providers that if they don't build the surveillance features that the FBI wants by October, she'll haul them into court.

The FBI has the telecom crowd up against the wall over a law called the Communications Assistance for Law Enforcement Act (CALEA), which requires service providers, including wireless operators, to retool their networks by October. CALEA is designed to help law enforcement agencies intercept suspects' voice and data communications. Companies face $10,000-per-day fines for noncompliance.

While wiretapping has been commonplace for years, technologies such as call-forwarding and ISDN have made surveillance more difficult. The industry put forward a plan to modify switches to ease that burden, but was rebuffed by the FBI.

In response, telephone companies, including AT&T and local exchange carriers, are accusing the FBI of trying to take control of the nation's public networks by dictating design changes and personnel practices.

Not surprisingly, public advocacy groups, such as the Electronic Privacy Information Center (EPIC) and the American Civil Liberties Union, claim the FBI's demands will turn each telephone central office into a "Big Brother"-style monitoring station for the government.

Congress gave the Federal Communications Commission the power to set the ground rules for CALEA, and within a few months the FCC is expected to decide which group will prevail in the standoff: the industry or the FBI.

In fact, Reno last week told the House Appropriations Subcommittee that unless the FBI and the telecom industry can resolve their impasse, the Department of Justice on March 13 will ask the FCC to set new standards for all telephone networks so local, state and federal law enforcement agencies can wiretap the way they think is necessary. "Unfortunately, if we are pressed to take this step, we will avail ourselves of all lawful mechanisms available," Reno said.

Private corporate networks ultimately may be drawn into the fray because the FBI has suggested that CALEA may cover them as well.

If it sides with the Justice Department, "the FCC will get thousands of petitions from operators and manufacturers asking for relief from the October deadline," said Dan Bart, vice president of standards and technology at the Telecommunications Industry Association, a Washington, D.C.-based trade group representing the manufacturers.

The network industry desperately wants a two-year delay of the CALEA deadline, something the FBI opposes.

The industry's own proposed standard for CALEA goes so far as to provide instant interception of a suspect's communications, as well as a locator feature to give law enforcement the whereabouts of a cell phone user. But the FBI wants more, and has issued a surveillance "wish list" for items such as conference-call interception (see graphic).

The industry eventually may supply these features, but the argument now has boiled down to one simple question: Who controls the networks — the industry or the FBI?

At this point, even the original sponsor of the now four-year-old CALEA law, Sen. Patrick Leahy (D-Vt.) suspects the FBI has overstepped its bounds.

Leahy is considering how or if to put the brakes on the FBI's "overzealousness," said Senate sources, who added that Reno and FBI Director Louis Freeh have avoided responding to the senator's letters on the issue for months.

Last week, Rep. Bob Barr (R-Ga.) said he intends to introduce a bill to delay CALEA.

However, CALEA can be regarded as a gold mine for the telecom industry because it authorizes the Justice Department to dole out $100 million this year — $500 million in total — to equipment makers and service providers to add surveillance features.

As any big spender on telecommunications would, the FBI has assigned teams to meet with suppliers, in this case Nortel, Lucent Technologies, Inc., Siemens Telecom Networks, Motorola, Inc. and the service provider GTE Corp.

FBI documents filed at the FCC show that Nortel, GTE and Motorola have been the most cooperative. AT&T, though, has expressed profound misgivings about the FBI's role.

"AT&T strongly disagrees with the implication that law enforcement can foist upon a carrier some solution that requires network redesign or the acceptance of some third-party product for integration into or attachment to its system," AT&T said in its comments to the FCC.

But others are ready to deal. Nortel already is negotiating a contract with the government to pay for changes to its DNS-100 switches. The vendors have all asked the FBI to keep its estimated CALEA costs secret, which the FBI so far has done.

FBI documents show that few vendors appear confident that the FBI's CALEA wish list can be technically satisfied. Supremely confident, however, is Bell Emergis, a Bell Canada subsidiary, which has said it can grant all the FBI's wishes in time. But in what has to be the first case of surveillance vaporware, Bell Emergis has convinced the FBI of this without giving it any sort of technical demonstration.

Industry insiders claim the CALEA technical process has been slowed by the FBI's failure to publish capacity requirements for how much surveillance it expects to do, something required under the CALEA law.

Privacy advocates, of course, say they saw this coming. "The FBI sought more authority than anticipated, and it's far less workable than first thought," said Marc Rotenberg, director of EPIC, in Washington, D.C. ■

INFORMATION DEMANDED BY THE FBI

- Ability to monitor conference-call content
- Information about who has joined or been dropped from a conference call
- Information about use of phone features such as flash-hook
- Notification that a call is ringing or has hit a busy signal
- Verification that an interception is still hitting the target individual
- Notification of a technical surveillance failure
- Alerts when a subject changes optional features

Get more online:

- The complete FBI wish list
- Correspondence about CALEA from Attorney General Janet Reno and U.S. Sen. Patrick Leahy

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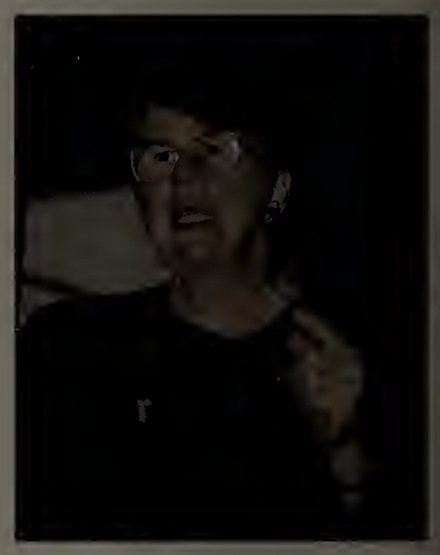

Reno *could haul nonconforming network companies into court.*

SONET snafu disconnects millions

Carriers lose signaling in rare SONET ring failure.

By Tim Greene
Olympia, Wash.

An unexplained and surprising failure of a Synchronous Optical Network (SONET) ring last Wednesday knocked out telephone service to millions of customers of Teleport Communications Group (TCG), Bell Atlantic Mobile and other carriers.

The 20-minute failure was unimaginably long for SONET, a technology billed as self-healing within milliseconds of a failure.

The SONET glitch disrupted the telephone signaling that directs calls over carriers' phone networks. In this case, Illuminet, Inc. was handling the signaling for TCG and Bell Atlantic. As of press time, Illuminet still did not know the cause of the failure, a company spokeswoman said.

Whatever the cause, the SONET problem knocked out switches at Illuminet signal transfer points in Mattoon, Ill., and Rock Hill, S.C. A signal transfer point is where Illuminet's signaling network talks to the signaling networks of other carriers. The switch outages lasted two hours and 20 minutes.

TCG, which buys telephone signaling services from Illuminet, expected Illuminet's network to be fully backed up in case of failure, according to Roger Cawley, vice president of public affairs for TCG. "Our expectation was that these facilities had redundancy. This should not have occurred," he said.

SONET is a network technology built around dual fiber-optic rings. If one ring fails, the network is designed to immediately switch traffic to the other ring.

Illuminet expected that redundancy would protect its network at the point where it failed, a spokeswoman said.

The vendors that supplied the SONET and switching gear were looking into the cause of the outage. Illuminet would not identify the vendors involved.

Illuminet can provide telephone signaling services because the phone signaling protocol, known as Signaling System 7 (SS7), runs on a network separate from the network that actually carries phone calls.

Signals from SS7 networks coordinate voice switches to set up circuits between callers and the parties they are dialing.

Small independent phone companies often do not own their own SS7 networks, so they buy SS7 service from carriers such as Illuminet.

Long-distance carriers rely on companies such as Illuminet to take signaling messages from their SS7 networks and pass the messages along to the voice switches in independent local phone companies' networks. In that way, the long-haul carriers can complete connections with customers of the local carriers. ■

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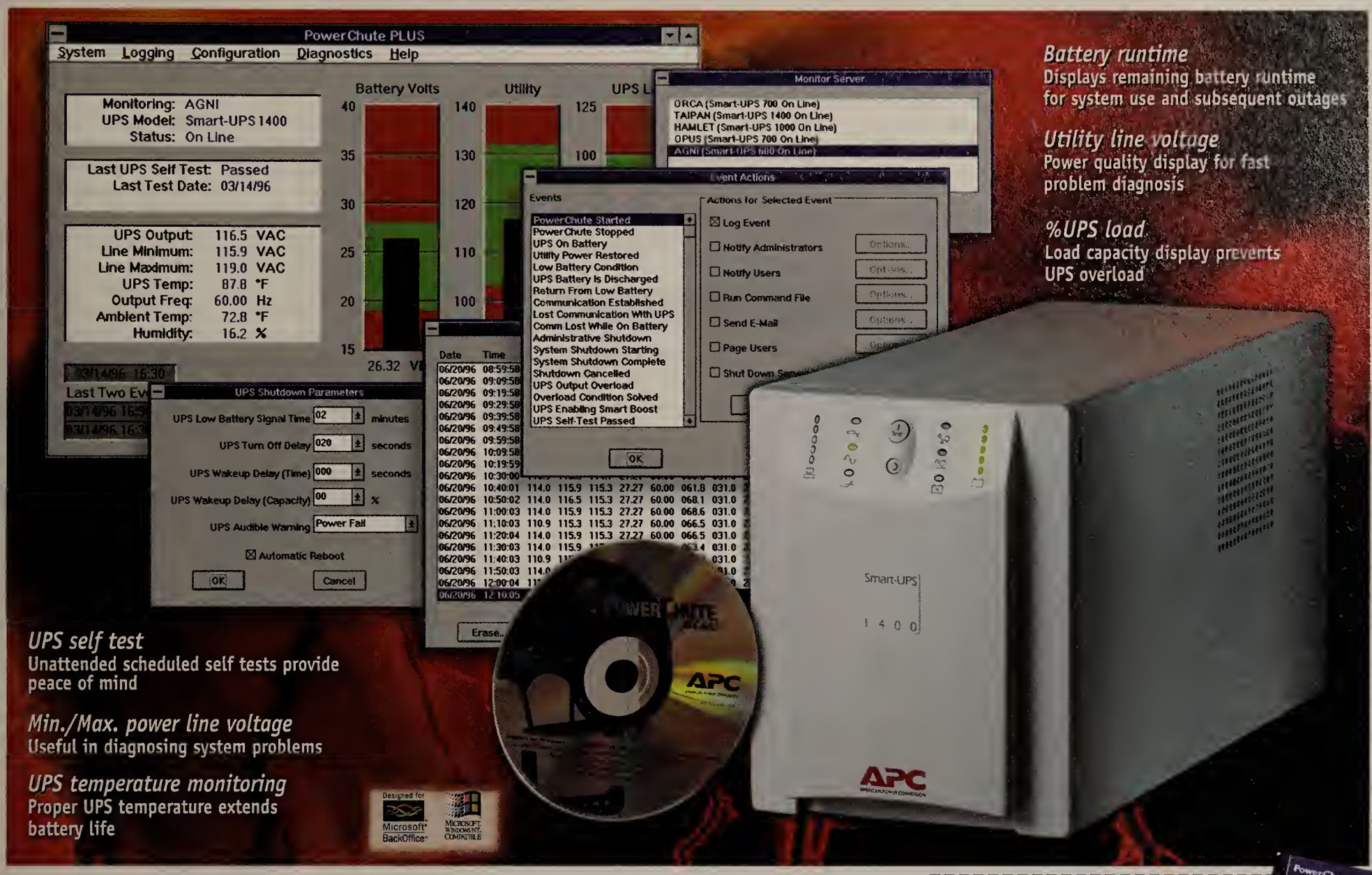

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Unified messaging and IP telephony take center stage at expo

By David Rohde
Los Angeles

A bevy of new products in the emerging markets of Web call center integration, unified messaging and IP telephony will be on display this week at the Computer Telephony Expo here.

One major announcement is expected to come from call center vendor Aspect Telecommunications, Inc., which plans to debut its new Web Agent software for corporate Web servers.

The Aspect software will enable a company to place a "call me" help button on its corporate Web site. When a customer clicks on the button, the server will download a Java applet. The applet first probes the customer's PC to see if IP collaboration packages such as CoolTalk or NetMeeting are present, said Dilip Venkatachari, Aspect's director of electronic commerce solutions. If one of those packages is loaded on the customer's PC, a dialog box appears, asking the customer if he wants to use the collaboration software.

If not, the applet prompts the customer to make available a second telephone line and a phone number. The call center's automatic call distributor then establishes a phone link between the customer and an agent. The customer also can choose whether to have a live conversation with the agent or use text chat, Venkatachari said.

Mutual fund company Strong Capital Management, Inc., in Menominee Falls, Wis., is testing Web Agent for its 200-seat call center. Strong chose Web Agent over other recently introduced Internet call center products because it offers different ways for customers and call center agents to collaborate, depending on their desktop configurations, said Peter Schwab, Strong's director of shareholder communications.

Web Agent replaces an earlier, more limited Internet call center integration effort from Aspect called Interactive Web (*NW*, Aug. 12, 1996, page 17).

Really unified

Helping the push toward unified messaging will be new alliances between Lucent Technologies, Inc., Microsoft Corp. and a host of fax software vendors. The companies will announce that users of Lucent's Octel Unified Messenger, a system for providing voice mail headers and playback capabilities in Microsoft Exchange mailboxes, can install fax server software from four different vendors to add fax messages to the Exchange client interface.

Octel Unified Messenger began shipping several months ago. "But the first version only had voice mail, so users asked what's so unified about it?" said Joseph Avellino, president of Lucent partner Optus Software, Inc., in Somerset, N.J.

In the IP telephony arena, Dallas-based Selsius Systems, Inc. will demonstrate Version 2.0 of its Selsius-IP PBX at the expo. Selsius-IP is a call processing system that transports intraoffice voice over Ethernet and wide-area voice over the public telephone network or a managed IP network, all with traditional phoneset end points (*NW*, Sept. 22, 1997, page 29). The new version adds call waiting and interfaces to support external voice mail and interactive voice response systems, plus IP addressing for the phones.

✆ Aspect: (408) 325-2200; Lucent: (800) 444-5590; Selsius: (972) 855-8200

Adding muscle to unified messaging

Lucent's Octel Unified Messenger for Microsoft Exchange will support the following fax servers:

Name of fax server	FacSys	LanFax NT	Fax Sr.	Faxination
Company	Optus Software	Alcom	Omtool	Fenestrae

Intel jumps into routing switch market

Layer 3 switches, Gigabit Ethernet module among new products.

By Scott Lajoie
San Francisco

Despite Intel Corp.'s claim that it is "not an enterprise player," company officials last week introduced and demonstrated a slew of equipment that could find its way into big corporate networks.

The company rolled out stackable switches that route at wire speed and demonstrated a host of Gigabit Ethernet gear at a press and industry analyst event here.

The rollout included Intel's Express Routing Switches, which sport eight 10M/100M bit/sec ports and support Layer 3 switching. The copper 550T model costs $3,195 and the fiber 550F model costs $7,995.

A $1,995 matrix module, which will ship in May, enables customers to stack Intel's routing switches up to seven units high; they will have an aggregate switching capacity of 14.7G bit/sec. Companies will be able to include Intel's existing 510T 10M/100M bit/sec switch in such a stack.

Intel also announced a one-port Gigabit Ethernet module that can plug into any of the company's Express switches.

JASON GROW

Intel's *new stackable 550T Express Routing Switch supports Layer 3 switching.*

New Gigabit Ethernet switches, expected to hit the market around midyear, were displayed by Intel as well.

In addition, the company released its new router, the Express 8100. It features a 144-bit encryption option to help companies move WAN traffic to an Internet-based virtual private network. The branch-office offering has one WAN port, whereas existing Intel routers have multiple ports. The new router costs $699.

Intel rounded out its new products with the stand-alone Express 130T hub. This branch-office product includes eight autosensing 10M/100M bit/sec ports and costs just under $700.

New network interface cards also are scheduled to be available soon from Intel. In each of the next four months, the company will roll out a new one, including a Gigabit Ethernet card.

Analysts said Intel didn't break new technical ground with the announcements and demonstrations, but did send another strong message to customers and competitors that the chipmaker is continuing its foray into the network equipment market.

"None of these products are revolutionary, but they do suggest that Intel is focusing on the enterprise more, especially with the Gigabit Ethernet up-link module and coming Gigabit Ethernet switches," said John Armstrong, an analyst with Dataquest, Inc., in San Jose, Calif.

✆ Intel: (800) 538-3373

Network Associates makes bid for Trusted Information Systems

By Ellen Messmer
Santa Clara, Calif.

Network Associates, Inc. last week announced plans to purchase Trusted Information Systems, Inc. (TIS) for $300 million. The stock-based buy gives Network Associates TIS' Gauntlet firewall, the Stalker intrusion-detection system and TIS' encryption key-recovery expertise.

TIS *President and CEO Walker*

The acquisition, expected to be completed within 90 days, comes on the heels of Network Associates' purchase of Pretty Good Privacy, Inc. (PGP) last December. PGP makes public-key encryption software for mail and file encryption.

"This makes us the largest security software company in the industry," said Network Associates CEO Bill Larson.

Network Associates was created last year through the merger between Network General, Inc., maker of the NetTools network management system and the Sniffer packet-analysis tool, and antivirus software developer McAfee Associates, Inc.

Network Associates last week shipped its latest security product, CyberCop, which can report and automatically take steps against suspicious network activity.

Impressive arsenal

Although Network Associates now boasts an impressive arsenal of security products, the challenge is to make them all work together.

"We're going to be integrating all these products into NetTools," Larson said. This will allow for the management of antivirus software distribution, firewall configuration, systems monitoring and e-mail security-policy enforcement from one security console based on NetTools.

However, neatly reconciling the differing security philosophies espoused by TIS President and CEO Steve Walker and Phil Zimmerman, PGP's founder and now senior fellow at Network Associates, may be tougher.

Walker, a National Security Agency veteran and a pioneer in the commercial firewall market, is an outspoken advocate of encryption key-recovery technology that lets the government decrypt a user's scrambled data with a master key. TIS has developed the only commercial key-recovery technology approved by the government.

In contrast, Zimmerman won fame during the past five years for his fight against government control of encryption, and he recently told *Network World* he hoped PGP would never use government-approved key recovery.

But just last week, Network Associates President Les Denend said it is possible the company will develop a version of PGP that uses TIS' RecoverKey technology. "It's not Phil Zimmerman's decision, it's the user's," Denend said. ■

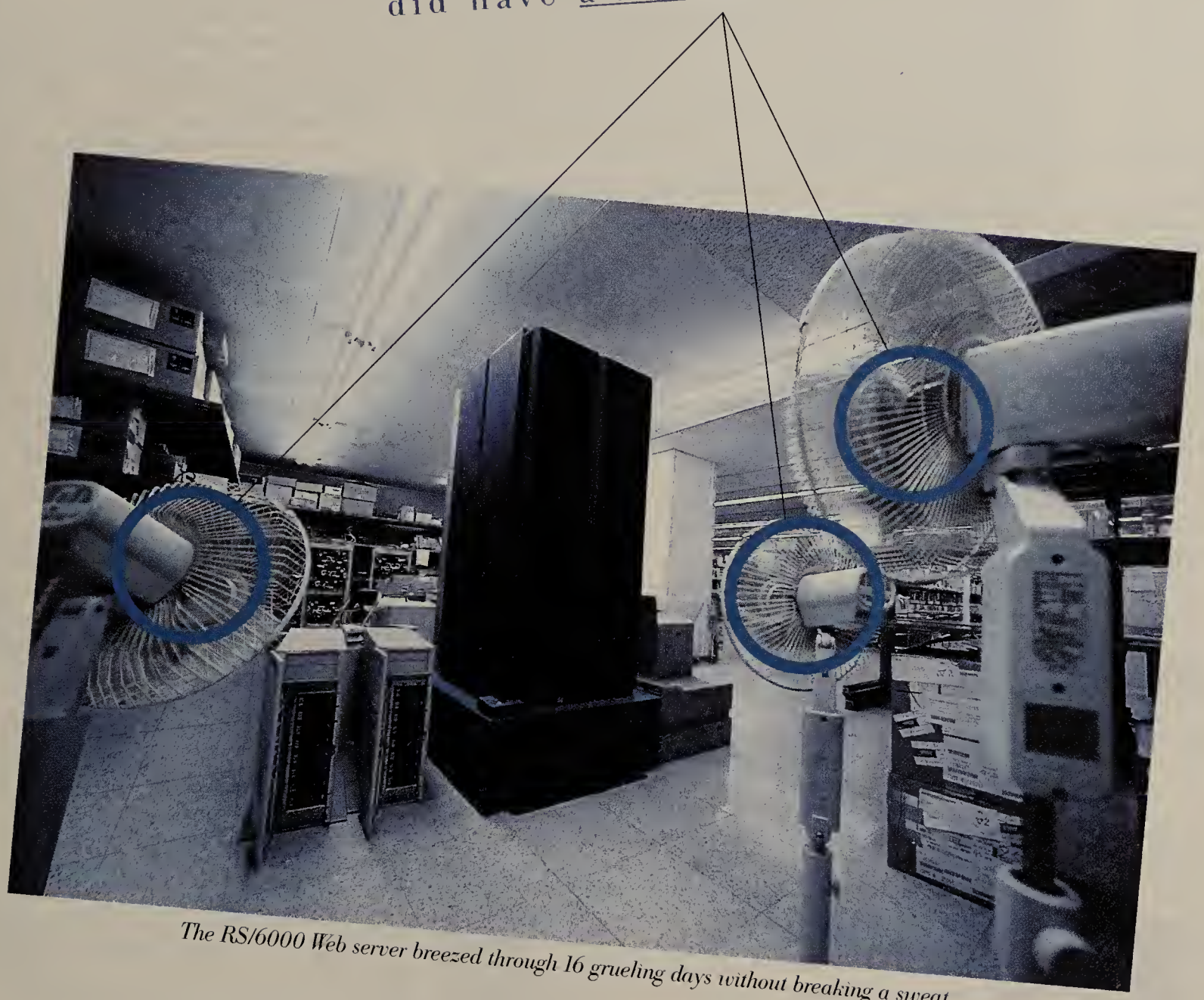
No medals.

No anthems.

No team jackets.

Just 600 million hits to the Nagano Games Official Web site.

Okay, so the IBM RS/6000 Web server did have a few fans.



The RS/6000 Web server breezed through 16 grueling days without breaking a sweat.

IBM's award-winning[1] UNIX® server, the RS/6000™, flawlessly powered the Nagano Games Official Web site. And even set a record of its own: handling 98,226 hits in a single minute[2]. Recently named product of the year by *InfoWorld*[3], the RS/6000 has the speed, power and endurance that can help your business compete. Prices start at just $5,900[4], so come visit us at

www.ibm.com/rs6000/nagano

Worldwide Partner

RS/6000 named number one Web server in *InfoWorld*, July 1997. [2]Record established on 2/17/98. [3]*InfoWorld*, February 1998. [4]Price shown is IBM suggested retail price and represents base model configurations. Actual retail price may vary. The official Web site of the Nagano Games was built, run and hosted by IBM. IBM and RS/6000 are trademarks of International Business Machines Corporation in the U.S. and/or other countries. UNIX is a registered trademark in the U.S. and other countries, licensed exclusively through X/Open Company Limited.

IBM adds fuel to its firewall services

Managed service relies on off-site IBM universal server farms, offers load balancing.

By Denise Pappalardo
Somers, N.Y.

IBM Global Services is boosting its managed firewall service by adding support for the Internet Engineering Task Force's IP Security (IPSec) tunneling protocol, new utilization reporting and server load balancing.

The service, now called the Managed Data Network Services Firewall, should have greater customer appeal, one analyst said. The previous service was called IBM Global Network Firewall Option.

With its previous service, IBM was not offering all of the bells and whistles, such as reporting and IPSec, that users look for in a security service, said Frank Dzubeck, president of Communications Network Architects, Inc., a Washington, D.C.-based consulting firm.

The IPSec-based tunneling protocol will let users securely access the Internet over their frame relay or dedicated IP connections by using encryption and authentication.

IPSec is a Layer 3 protocol that supports X.509 digital certificates, which encrypt and authenticate each packet that passes through a firewall.

This is the first time IBM is supporting IPSec, a protocol that is believed to be one of the more secure ways to perform IP tunneling, according to industry analysts.

IBM'S SECURITY OPTIONS

IBM Global Services revamped and renamed its firewall service. The improved service adds more security, reporting features and more flexible pricing. The new Managed Data Network Services Firewall offering includes:

- Usage reports from all servers used by its dial-up and dedicated Internet access employees
- IETF IPSec tunneling
- Load-balancing features on all firewall servers using IBM's Interactive Network Dispatcher software
- Centralized server farm that supports 24-7 monitoring and management of all firewalls
- High-speed Internet access via OC-3 and DS-3 connections

Pricing starts at $500 for 2G bytes of traffic for up to 25 users.

Big brother tool

IBM is also offering utilization reports that monitor where employees go on the 'Net and how long they are online.

In addition, Interactive Network Dispatcher server load-balancing software is part of the new service. The load-balancing software moves users away from a firewall server that is nearing overload and directs them toward another that is less taxed, said Andy Slater, global services manager at IBM.

The load-balancing software is especially appropriate for IBM's service because the company puts all of its firewalls in universal server farms, Slater said. This centralized approach should make it easier to switch between servers.

More than 1,000 servers are stored, managed and monitored at IBM's universal server farms, he said. There are server farms in Illinois, England and Germany. IBM is adding another server farm in the Asia-Pacific region in April, Slater said.

In contrast, many of IBM's competitors, such as Sprint Corp., GTE Internetworking and ANS Communications, offer managed firewall services in which the firewalls are actually installed at each user's location.

IBM's approach is similar only to that of Pilot Network Services, Inc., which has been offering its managed firewall service for the past two years. Like IBM, Pilot has off-site server farms.

The services also are similar in the fact that Pilot and IBM are using their own firewall technologies. But there is also a key difference between the approaches of the two companies.

Pilot offers its customers security status reports that detail break-in attempts and how Pilot handled those situations. IBM does not have any plans to offer such a feature, according to Slater.

IBM's service is slated for availability at the end of the month. Pricing starts at $500 per month for 2G bytes of traffic for up to 25 users. Long-term contracts for a high volume of users can lower monthly fees to the equivalent of $5 per user, Slater said. ■

SCO gets dough for 64-bit Unix revamp

Compaq, DG, ICL and Unisys all on board, though some doubt Compaq's commitment.

By Christine Burns
Santa Cruz, Calif.

The Santa Cruz Operation, Inc. (SCO) last week signed up some heavy hitters to help pay for moving its UnixWare operating system to Intel Corp.'s yet-to-be released 64-bit Merced chip.


SCO's *Mohan*

Compaq Computer Corp., Data General Corp., Fujitsu, Inc. subsidiary ICL, and Unisys Corp. announced they will collectively contribute millions of dollars to help SCO upgrade its flavor of 32-bit Intel-based Unix. In return, SCO will make sure the operating system is compatible with its backers' hardware.

SCO President Alok Mohan said the money will allow his company to finish commercial and OEM versions of 64-bit UnixWare by the time Merced and high-end servers based on the chip ship next year.

SCO also is planning to improve the enterprise features of UnixWare. Mohan said the symmetrical multiprocessing support will increase from the current 10 CPUs to 32 Merced processors. Its clustering capability will increase from the current four to six nodes to 16 nodes next year and to 32 nodes by the year 2000. Mohan also promised a performance boost from 10,000 transaction/second to 100,000 transaction/second.

The deal between SCO and its partners will give these systems vendors fast access to a 64-bit Intel-based version of Unix, without porting. In the past, the companies have licensed the 32-bit version of UnixWare from SCO, then tweaked it for their respective machines.

SCO currently holds 85% of the Intel-Unix market, according to International Data Corp. (IDC), a market research firm based in Framingham, Mass. But Jean Bozman, IDC research manager for Unix and client/server operating environments, noted that almost all of UnixWare's penetration lies in small to midsize shops.

For SCO, a software-only vendor with revenues barely approaching $200 million annually, this deal gives it the resources necessary to compete against enterprise Reduced Instruction Set Computing-based Unix vendors such as Digital Equipment Corp., Sun Microsystems, Inc. and Hewlett-Packard Co., Bozman said.

Industry analyst Tony Iams of D.H. Brown and Assoc., in Port Chester, N.Y., said the new developments involving SCO and its partners are likely to cut down on the number of Unix flavors out on the market. DG already has committed itself to phasing out future development of DG-UX, and ICL and Unisys are likely to follow suit, Iams claimed. Iams also questioned Compaq's commitment to 64-bit UnixWare in light of its pending acquisition of Digital, which will make Compaq the owner of Digital Unix.

But IDC's Bozman argued that Compaq could offer its customers both flavors of Intel-Unix in the future. "It would just be a matter of choice. That kind of choice is necessary if you are going after the big enterprise customers," Bozman said.

✆SCO: (408) 425-7222

CORRECTION

A recent Buyer's Guide chart on Network Simulation Tools (*NW*, Feb. 23, page 49) incorrectly identified the Blue Ribbon winner of our online review (www. nwfusion.com, DocFinder 5917). The winner was ImageNet, Inc.'s CANE.

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Wireless heavies promise 500-fold speed boost

By Denise Pappalardo
Atlanta

Wireless industry leaders last week promised to build networks that will be up to 500 times faster than most current systems.

A cadre of companies announced plans to develop third-generation wireless hardware that is based on the Code Division Multiple Access (CDMA) protocol and is designed to run up to 7M bit/sec. Most of today's wireless networks top out at 14K bit/sec. The plan, which supports voice and data, was announced at the Wireless 98 show in Atlanta, which was sponsored by the Cellular Telecommunications Industry Association.

Sprint PCS, Lucent Technologies, Inc., Motorola Cellular Infrastructure Group, Northern Telecom, Inc. and Qualcomm, Inc. are developing the new network architecture, which will support multiple wireless protocols, including today's CDMA, analog cellular and Global System for Mobile Communications (GSM). This wireless gang of five hopes to entice hardware makers and service providers to support the architecture.

The group's wireless system will include the following:

- Backward compatibility with today's CDMA
- Data rates ranging from 2M to 7M bit/sec
- Use of current licensed personal communications services (PCS) spectrum

Analog cellular is considered to be the first generation of wireless technology, and PCS' all-digital technology is the second generation. Although the European Telecom Standards Institute has been working on a specification for third-generation wireless networks, the group still is evaluating Wideband CDMA and a combined CDMA, Time Division Multiple Access and GSM platform.

That indecisiveness has led these five companies to take matters into their own hands. The group believes its third-generation wireless system will be ready for testing by the year 2000. ■

Microsoft buys into real-time messaging

By Paul McNamara
Redmond, Wash.

Microsoft Exchange customers can expect a future version of the e-mail/groupware platform to include instant messaging and the ability to show when other users are online.

These new features will come courtesy of Flash, Inc., a Boston-based start-up acquired last week by Microsoft Corp.

While instant messaging products boast different features, most rely on peer-to-peer TCP/IP connections between parties who are online simultaneously, rather than the store-and-forward mechanism of client/server e-mail. Messages appear in the corner of a user's screen, and a small window listing colleagues and friends keeps the user abreast of their online status and availability.

Terms of the Microsoft/Flash deal were not announced, nor did Microsoft pro- vide a timetable for integrating the Flash technology into Exchange.

America Online, Inc.'s Instant Messenger offering is perhaps the best known of this new breed of messaging products. But recent entries, such as Activerse, Inc.'s Ding, have heightened corporate interest and e-mail vendor development efforts.

Flash was poised to market its own Windows 95- and NT-based client/server instant messaging product before being snapped up by Microsoft.

Other major messaging vendors also are stepping up to the plate. Lotus Development Corp. and Netscape Communications Corp. have cast their lots with Instant Messenger, while Novell, Inc. said it has an online presence notification capability under development for its GroupWise product.

Microsoft and Lotus are among the vendors developing a standard way for these new messaging offerings to work with each other. Their Rendezvous Protocol currently is being pushed along the Internet Engineering Task Force standard track. ■

Tivoli tools target output management

By Jim Duffy

Tivoli Systems, Inc. last week unveiled two products that enable users to better control data scheduling and distribution.

At the same time, management rival Hewlett-Packard Co. unveiled an enhanced version of its data backup software, and Computer Associates International, Inc. (CA) announced a partnership that could ease management of wireless devices.

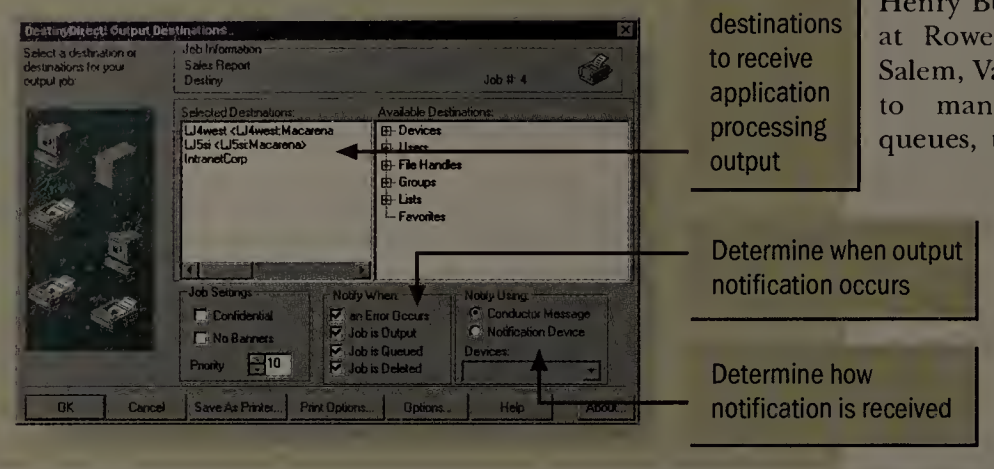
Tivoli's two new products, TME 10 Output Manager and Tivoli Destiny, target output management. This is the practice of scheduling and distributing the results of application processing via printouts, fax, file transfer or electronic mail.

TME 10 Output Manager runs on the TME 10 framework, and Tivoli Destiny is a standalone application. Both run on Windows 95 and NT clients, and Windows NT and Unix servers, and provide centralized output control from a single console.

With TME 10 Output Manager and Tivoli Destiny, IT administrators can define rules to distribute information to output devices — faxes, printers, storage, e-mail or Web servers — located anywhere in the corporate network. The products confirm file contents, check output for accuracy and deliver output in multiple formats according to the administrators' rules.

TIVOLI'S DESTINY

With Output Manager, users can:



"We're in a mainframe environment now and we're going [to] NT client/server," said Henry Buckland, director of IS at Rowe Furniture Corp., in Salem, Va. "We need to be able to manage the production queues, the priorities at which things run. [Tivoli Destiny] seems to give us every bit of that and a better scheduling capability than we had on the mainframe."

TME 10 Output Manager and Tivoli Destiny will be available in the second quarter. Pricing will be announced at that time.

Also available in the second quarter will be HP's OmniBack II 3.0 software, which lets users define backup policies and centrally control backup for Unix and Windows NT environments from an NT or Unix console. Previously, OmniBack II backup and restoral operations were separate for Unix and NT environments, and could only be administered from a Unix machine.

OmniBack II 3.0 will ship in June. The NT edition costs $995 and the HP-UX version costs $3,900.

Meanwhile, CA's alliance with Symbol Technologies, Inc. is aimed at delivering wireless management products based on CA's Unicenter TNG management system. The combination of Unicenter TNG and Symbol's Spectrum24 wireless mobile computers will allow users to manage their enterprises regardless of their physical location.

✆ Tivoli: (800) 284-8654; HP: (800) 752-0900; CA: (516) 342-5224

Nortel

Continued from page 1

that ATM can't keep pace."

The Enterprise Data Networks unit becomes the fifth line of business for Nortel. The others focus on PBXs, wireless products, broadband equipment and carrier gear.

Delorenzi said Nortel started tracking data revenues two years ago and last year chalked up sales of $785 million with year-to-year growth of 24%. The bulk of the revenue came from sales of Passport, an ATM switch Nortel was installing in carrier networks as an edge switch and at some large enterprise sites as a backbone device.

Thinking corporations were tapping out their T-1 networks and believing it had a good story to tell, Nortel decided to stop playing around the fringes and jump into the enterprise market. It combined the Passport business with frame relay access gear that came in 1996 with the acquisition of Micom Communications Corp., and formed the new enterprise unit Feb. 3.

The unit's initial mission will be to sell corporations on the merits of swapping out T-1 multiplexers for higher capacity, more versatile Passport boxes, said David Ramos, vice president of global marketing and communications. "We just sold a 17-node Timeplex T-1 replacement net and will try to show other customers how this is a no-brainer," he said.

The Passport can use private line, frame relay, ATM or any combination of these backbone facilities. And it can support any mix of corporate traffic, including multimedia and IP. Some customers are even using Passports to build integrated voice/data T-3 backbones.

Because 45M bit/sec T-3 trunks cost about as much as four or five 1.54M bit/sec T-1 links, large companies can justify building T-3 ATM networks that support legacy and routed IP traffic — typically supported on separate T-1 links today — as well as corporate voice traffic.

"When data traffic is low, the network supports more voice," Delorenzi said. "When data spikes up, you have the option of increasing voice compression or spilling it back into the public network." The upshot: vastly increased data capacity and voice rates of about 6 cents per minute compared to the 10 cents per minute charged by carriers.

"Half of our T-3 backbone customers are supporting voice," Ramos said.

Gigabit backbones

While the Passport gives the new unit an interesting WAN pitch, WAN products by themselves do not an enterprise story make. The missing piece for the Enterprise Data Networks unit is the LAN component, and here is where Gigabit Ethernet enters the picture.

Recognizing that this young market is already crowded and that Nortel faces an uphill battle fighting for mindshare, Delorenzi said the plan is to try to change the rules.

"Most campus LAN environments are stratified into three layers of switching," he said. "You have departmental, intermediate and backbone switches. Our plan is to collapse this into one." That will deliver performance and cost benefits in lower port costs and savings in terms of administering one vs. three layers of switches, Ramos said.

Although short on details, Delorenzi said the idea is to deliver a high-capacity Layer 3 Gigabit Ethernet switch capable of supporting multiple protocols, which is different from the IP-only approach of many other gigabit vendors. "After all, users still have a lot of IPX and SNA traffic," Ramos said.

Nortel would first pitch the switch as a backbone device that would immediately do away with the need for an intermediate layer of switching by providing direct support for workgroups. And from there, Nortel would try to push down into workgroups, replacing departmental switches.

The justification for jettisoning the departmental devices is the now popular belief that the 80/20 traffic rule has been inverted by the World Wide Web. Where once 80% of LAN traffic remained within a given LAN domain, now only 20% of the traffic does. Eighty percent of LAN traffic is being routed to remote Web servers, either somewhere else on campus or out on the Internet.

With all that traffic bound for remote locations, there is little to be gained by keeping switches at the departmental level.

Although Delorenzi said Nortel has applied for patents, he wouldn't say where they fit into the gigabit picture. He also noted that Nortel wouldn't rule out acquiring technology as required.

An equally compelling piece of Nortel's gigabit vision is the plan to develop stringent network controls. "Today the guy in the corner office has the same network priority, same capabilities and the same associated network costs as the guy in the mail room," Ramos said. "Never mind that the CEO is trying to download financials and the mail room guy is trying to send a picture to his girlfriend. That's untenable to the CIO."

While the industry has tried to address this problem with remedies such as the Resource Reservation Protocol, Delorenzi said these efforts are too limited. The answer is to pace traffic at the desktop, he said.

Asked about the timing of the gigabit push, Delorenzi said: "The strategy is to get into the market this year." ■

NORTEL'S ENTERPRISE PORTFOLIO

The newly formed Enterprise Data Networks unit will offer:

For WANs
Existing Passport ATM switch positioned as a replacement for T-1 muxes.

For WAN access
Gear acquired from Micom to integrate data, voice, fax and LAN traffic on frame relay and private-line networks, as well as phone/fax IP gateways.

For campus LANs
To be determined, but probably a multiprotocol gigabit backbone switch supporting QoS and capable of reaching down into the workgroup.

For small offices
To be determined, but maybe true integrated technology where voice is treated as a data application.

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Xylan throws hat into stackable switch ring

OmniStack line features mix of Ethernet, Fast Ethernet and Gigabit Ethernet.

By Robin Schreier Hohman
Calabasas, Calif.

Xylan Corp. last week introduced a line of Ethernet and Fast Ethernet switches, including the company's first stackable device.

In addition, Xylan has upgraded its switch operating system software to include improved security and management technology.

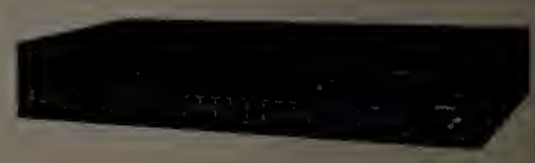
The new OmniStack switch line consists of five models, which have from 16 to 32 ports, as well as Fast Ethernet, Gigabit Ethernet and ATM uplinks. Several models support Layer 3 switching.

Despite the name, only one of the initial batch of OmniStack switches is actually stackable. Up to three of the OmniStack 3032 switches can be stacked together and managed as a unit via a single IP address. The 3032 features 32 Ethernet ports and one or two ATM, Gigabit Ethernet or Fast Ethernet uplinks. The switch is priced at $5,950.

That's an aggressive price when compared with the $4,950 Xylan charges for its existing 12-port fixed configuration Ethernet switch, dubbed the PizzaSwitch.

Later this year, Xylan plans to add another stackable switch to its OmniStack line, called the OmniStack 6000. It will be a 10M/100M bit/sec autosensing switch.

Information is not yet available on the number of ports the switch will have or how much it will cost.



Xylan's new OmniStack 5024 *switch features ATM, Gigabit Ethernet or Fast Ethernet support.*

Here's how the rest of Xylan's OmniStack line shapes up:

- The OmniStack 1032 has 32 Ethernet ports and two Fast Ethernet uplinks. It costs $3,350.
- The OmniStack 2032 features 32 Ethernet ports and one or two Fast Ethernet, Gigabit Ethernet or ATM uplinks. It costs $4,000.
- The OmniStack 4016 has 16 10M/100M bit/sec autosensing ports and costs $3,150.
- The OmniStack 5024 has 24 10M/100M bit/sec autosensing ports and one or two Fast Ethernet, Gigabit Ethernet or ATM uplinks. It costs $7,000.

The fact that the 5-year-old Xylan is now offering stackables is a good sign, said Tom Nolle, an analyst at Cimi Corp., in Voorhees, N.J.

"It's an indication that a company is reaching a mature position [in the industry]," Nolle said. "The biggest thing the new line does is improve price/performance. If there was any problem with Xylan, they were a little bit on the [costly] side for current market conditions."

In addition to the new hardware, Xylan has enhanced the Xylan Operating System (XOS) software with Switched Network Services (SNS). SNS adds IP firewall, user authentication, port binding, multicast, and address and directory management services to XOS.

Xylan developed SNS in partnership with companies such as Check Point Software Technologies, Ltd. and IBM.

Many of the SNS services won't ship until the second or third quarter of 1998. Pricing was not available.

✆ Xylan: (818) 880-3500

Briefs

■ *The* **ATM Forum** *has ratified three* **new specifications** *designed to move ATM technology forward. The ATM Security Framework 1.0 lays out a general ATM network security scheme, the Native ATM Services Data Link Provider Interface 1.0 defines an interface for developing Unix-based applications for ATM nets, and the ATM Test Access Function Specification 1.0 describes how to monitor an ATM cell stream.*

© ATM Forum: (650) 949-6700

■ **Cabletron Systems, Inc.'s Digital Network Products Group** *last week announced an extension to its RoamAbout* **wireless LAN** *that will enable network administrators to manage networks while up to 10 miles away.*

The Digital group will offer an antenna for each building where a network needs to be managed. Net managers can access the antenna and RoamAbout wireless LAN via a laptop PC card. A typical RoamAbout wireless LAN costs $2,495.

© Digital Network Products Group: (800) 344-4825

■ **Sun Microsystems, Inc.** *is extending its* **workgroup server line** *with two entry-level systems for small businesses. Sun Enterprise Ultra 5S has a 270-MHz, 64-bit RISC UltraSparc processor, 512M bytes of memory and 4.2G bytes of storage. The Enterprise 10S has a 300-MHz, 64-bit RISC UltraSparc processor and the same amount of memory and disk space as the Ultra 5S.*

Both systems run the Solaris operating system, have PCI buses and support 10/100Base-T connections.

The Ultra 5S costs $3,795 and the Enterprise 10S costs $5,995. They are available now.

© Sun: (800) 786-3463

Thin-client vendors feel PC price pressure

But even sub-$1,000 PCs will pack a host of hidden costs, argue thin-client proponents.

By John Cox

Plummeting PC prices may force thin-client vendors to trim their prices in coming weeks, according to industry observers.

Analysts don't expect the lower PC prices to shut new terminals and network computers (NC) out of corporate networks, but they said companies should be able to get even better bargains on already inexpensive thin clients.

Several PC vendors are using low-cost processors from chip makers other than Intel Corp. to offer Windows PCs without monitors for under $1,000. Machines for the consumer market are being tagged as low as $800.

"Having these things advertised at $800 sets a challenge for us, even though customers pay considerably more for their final configured PC," said Lee Rainey, director of marketing for thin-client vendor Tektronix, Inc.'s Network Display Division in Beaverton, Ore.

Lower thin-client prices sound good to Microsoft Corp., which figures the prices could stimulate demand for its forthcoming Windows-based Terminal (WBT) Server. The multiuser version of Windows NT 4.0 is designed to serve multiple thin clients.

"We believe that for the Windows-based Terminal to be successful, it will have to be in the $500 range," said John Frederiksen, Microsoft's group program manager for WBT Server. "And they will be more successful as the prices come down."

No matter how inexpensive PCs become, thin clients will always cost less, said Michael Kantrowitz, executive vice president of Neoware Systems, Inc., a King of Prussia, Pa.-based thin-client vendor.

"In a thin client, you don't have a hard drive, expansion slots or expensive CPUs," Kantrowitz said. "They're simpler to manufacture."

At the same time, thin clients out of the box actually have more capability than the sub-$1,000 PCs, Kantrowitz said. That's because PCs have to be equipped with a network card, terminal emulation software to access host applications, and X Windows software to access Unix servers. That package can add $300 to $400 to the PC price, and users may still have to pay extra for a monitor, Kantrowitz said.

Thin-client proponents argue that the purchase price for a thin client, including network hardware and a portion of the remote server cost, is only a fraction of the total cost of ownership of a desktop system. Total cost of ownership also includes maintenance and deployment costs.

Thin clients come in two flavors: Windows terminals and NCs.

Windows terminals access applications running on multiuser Windows NT servers and display results of server-based processing. Prices usually start around $600, although Wyse Technology, Inc. recently slashed the price of a gray-scale Windows terminal to $349.

NCs are designed to download and run Java applications and access server applications. IBM's fully equipped Java NC — the Network Station Series 1000, with 16M bytes of RAM and a choice of Web browsers — costs about $800.

Thin-client vendors acknowledge the price pressure of less expensive PCs but are close-mouthed about future plans. "We will continue to look at ways of making sure we're the most competitive offering out there," said Brian Boulay, project director, marketing, for IBM's Network Computer Division.

Regardless of which type of thin client they are interested in, users are expecting to see prices fall. "My intuitive feel is that Windows terminal prices will come down over time as competition and other things come into play," said Brian Boettcher, manager of systems services at Fastenal Co., in Winona, Minn. Fastenal is a beta site for Microsoft's WBT Server, which is scheduled for release around mid-1998.

"Even if PC prices fall to Windows terminal prices, you can't pack as much on a $500 PC or get the performance that you can with even a dual-CPU server and Windows terminals," he said. ■

Get more online:

- A discussion on thin clients vs. PCs
- An article on how network computers are finding their own niches and are no longer just PC replacements

FIND IT ON FUSION 6034

www.nwfusion.com

Extreme packs six Gigabit ports in new switch

10M/100M/1000M bit/sec Summit4 switch aimed at server farm environments.

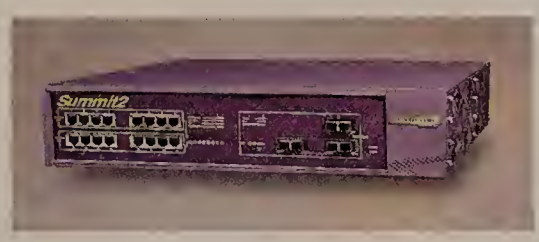
By Robin Schreier Hohman
Cupertino, Calif.

Extreme Networks today will announce a 10M/100M/1000M bit/sec switch designed to handle traffic coming into and out of server farms.

The Summit4 switch is a higher-density version of the firm's existing Summit2 device. The Summit4 boasts six Gigabit Ethernet and 16 autosensing Fast Ethernet/Ethernet ports, whereas the Summit2 has two Gigabit Ethernet ports.

The Summit4 features a 17.5G bit/sec nonblocking switch fabric, wire-speed IP routing at 11.3 million packet/sec and policy-based quality of service capabilities.

The switch could meet the needs of customers who currently have 100M bit/sec switched links to their servers but may soon need a few higher-speed connections as well, said David Passmore, president of NetReference, a Sterling, Va., consulting firm formerly called Decisys, Inc. "Or you might [figure] that you're going to have your servers running Fast Ethernet and you're going to hook to a Gigabit Ethernet backbone," he said.



Extreme's *new Summit4 switch features six Gigabit Ethernet ports, triple the number available on the existing Summit2 (shown here).*

If Extreme's new offering sounds very much like Compaq Computer Corp.'s Netelligent Gigabit Ethernet Switch and 3Com Corp.'s SuperStack II Switch 9000, it's no coincidence.

Extreme first developed the switch for Compaq, and 3Com has been selling the device under an OEM agreement since November. Compaq has shown the switch under the Netelligent name at several major trade shows, including NetWorld+Interop last fall. Oddly, there's no mention of the device on Compaq's Web site. 3Com, Compaq and Extreme all refused to comment.

The companies also would not comment on speculation that Extreme, which counts Compaq among its investors, will be snapped up by the network technology-hungry computer firm.

The Summit4 is available now with copper Fast Ethernet/Ethernet ports for $24,995. An all-fiber-optic model sells for $29,995.

✆ Extreme: (888) 257-3000

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Here's your problem: You've been wanting to buy desktop systems management software that includes automated inventory, documentation and a remote-control system. Somehow, though, you can't convince your boss that this is a good idea, so you're left to trudge from desk to desk to gather configuration information, always a few steps behind.

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There's a slew of built-in reports that will show you your Year 2000 readiness by desktop, vendor or status (certified, in process, needs update, etc.). Also included are applications to test the Year 2000 readiness of your PC systems for those that are either unidentifiable by ClickNet Professional or those whose manufacturers haven't provided information.

Dave Kearns

If you're still not sure what all the Year 2000 fuss is about, get a free copy of PinPoint's Year 2000 Desktop Survival Guide by registering at www.clicknet.com/y2k/understanding y2k/y2ksgform.html.

ClickNet Y2K can be a win-win situation. You get the desktop management product you've always wanted, and you get your boss off of your back about the millennium bug. He gets the marketing and salespeople off his back because your company can now send Year 2000 certification letters to clients and customers. All for about $30 per seat.

You can get all the details about ClickNet Y2K, see sample reports and find out more by visiting PinPoint at www.clicknet.com/y2k/clicknet-y2k/.

Kearns, a former network administrator, is a freelance writer and consultant in Austin, Texas. He can be reached at wired@vquill.com.

Tip of the week

There's bad news and good news this week. First, tips won't be appearing in "Wired Windows" anymore. But you can now double your weekly intake of tips by subscribing to Network World Fusion's Fusion Focus e-mail updates for Windows NT (find out how at www.nwfusion.com). Twice a week I'll send you the same kinds of tips you've seen here but with room for more information, since I won't be limited by the rigidity of print formatting. The first tips will be going out this week. Sign up now!

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SPECIAL FOCUS

Windows NT evolution

Microsoft rounds up NT 5.0 allies

By Christine Burns

Microsoft Corp. isn't going it alone with Windows NT 5.0.

While it might seem the company has few friends these days given all the fuss over its business practices, the next major release of NT Server will include more than a half-dozen components built by Microsoft partners.

Long-standing allies and newfound cohorts are contributing code that will handle chores such as online backup and disaster recovery, volume and storage management, disk defragmentation and directory migration.

"[To save time and money], it just makes more sense to augment the NT infrastructure with software from other vendors that are experts in their fields," says Jonathan Perera, lead product manager for Windows NT.

Industry analysts say forging relationships with other vendors to enhance NT is a savvy business move on Microsoft's part.

"Microsoft is mature enough to recognize when someone else has already invented a perfectly good wheel," says Randall Kennedy, a senior analyst at Giga Information Group, in Santa Clara, Calif.

In fact, Microsoft is no stranger to shipping foreign code inside the NT box. For example, the company has shipped backup utilities from Seagate Software, Inc. with NT since Version 3.51 hit the streets five years ago.

But NT 5.0 – expected to ship late this year or early next year – will have more non-Microsoft code than ever before.

Storage story

One wheel that Microsoft won't rebuild for NT 5.0 is software that lets network administrators manage the reams of data generated by new NT applications. The bundled storage, data and media management wares will be written by HighGround Systems, Inc., Seagate, Eastman Software, Inc. and Veritas Corp.

HighGround, a Boxborough, Mass.-based start-up, built the Microsoft Removable Storage Manager (MRSM) for NT 5.0. The server software oversees how applications store data on removable storage devices, such as tape drives and optical libraries, and then retrieve that data.

HighGround also is building separate products that tap into the base MRSM technology shipping with NT 5.0. These products will make it easier to manage multiple storage devices across an NT network.

Seagate, based in Heathrow, Fla., is supplying the manual online backup utility for NT 5.0, as the company did for earlier versions of NT. In addition, Seagate created NT 5.0's single-server disaster recovery software.

Building on these base services, Seagate will write more advanced tools for automating the backup process and providing networkwide disaster recovery services. They will be sold separately from NT 5.0.

Microsoft chose Eastman, of Billerica, Mass., to build NT 5.0's hierarchical storage management (HSM) tools, which allow companies to migrate legacy data off NT servers onto tape and optical drives.

Eastman will offer a separate product that provides hooks to many backup software packages and allows network managers to create HSM policies across NetWare and Unix servers, says Jeff Drescher, product marketing manager.

Mountain View, Calif.-based Veritas will supply the only non-Microsoft kernal-level code. The software will allow an administrator to allocate disk space, as well as create and modify disk partitions. An add-on product from Veritas will automate disk management across servers and handle performance and I/O tuning capabilities.

Powerful vendors Computer Associates International, Inc. (CA) and Cisco Systems, Inc. are among the other companies contributing code to NT 5.0.

CA built the Microsoft Directory Service Migration Tool, which will help users move data from existing Novell Directory Services trees and NetWare 3.X binderies into the much-anticipated NT 5.0 Active Directory.

Separately, Cisco is integrating its Layer 2 Transport Protocol and IP Security technology into the Microsoft operating system. This support will let users access NT 5.0 servers more securely over the Internet.

Another NT 5.0 addition is a manual file defragmentation utility from Executive Software. This tool reassembles files that have been fragmented by NT during the storage process and cuts down on the time it takes for a user to access files. Separately, Executive Software will deliver an NT add-on product for letting administrators schedule defragmentation policies across networked machines.

Partner gains

For Microsoft, its partnerships result in an operating system arguably better equipped for large-scale enterprise networks. The partners, meanwhile, receive two major benefits: instant visibility at NT shops and a head start in product development.

"We certainly didn't do this for the money we could get from Microsoft," says Mike Ivanov, product line manager at Seagate.

Seagate gained more by getting an early look at the NT 5.0 code, Ivanov says. This enabled the company to start developing its NT 5.0 backup and recovery products early and should allow Seagate to deliver those products to market ahead of rivals, he says.

But having your product bundled with a Microsoft operating system can be a double-edged sword, Kennedy says.

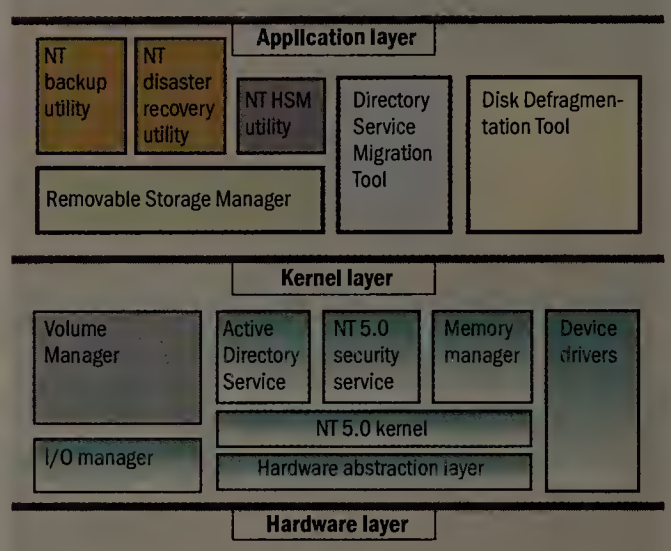
"On the one hand, you gain widespread exposure for your technology," he says. "However, you also put yourself in a position of having to differentiate your retail products from the bundled versions — not always an easy task."

Many users are not averse to having free utilities bundled in with their operating system. But they do say that Microsoft's endorsement doesn't necessarily compel them to buy separate products from Microsoft's partners.

"To me, bundleware basically amounts to which vendor cut the best deal with Microsoft," says Josh Turiel, director of information services at adlife, Inc., in Norwood, Mass. "That doesn't necessarily mean it's the best product." ■

NT 5.0 GETS A LITTLE HELP FROM ISV FRIENDS

When NT 5.0 ships later this year, customers will get a bunch of non-Microsoft code as part of the operating system.



Digital_Nervous_System:
intelligent evolution

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Racal Data Group

Access to Multimedia Information Networks

RACAL

Briefs

■ **Sync Research** *and* **Technically Elite, Inc.** *have joined forces to develop a* **LAN-WAN management platform** *based on Remote Monitoring 2 (RMON2). Technically Elite has expertise in LAN probes, RMON2 and traffic monitoring, while Sync specializes in WAN probes for service-level monitoring in frame relay networks. The two companies last week announced they will cross-license technology with the goal of developing RMON traffic monitoring hardware and software for the WAN market within the year.*

✆ Technically Elite: (408) 574-2300; Sync: (714) 588-2070

■ **Arescom, Inc.** *recently introduced Flash300Plus2, an* **external ISDN terminal adapter** *that comes with parallel and serial ports. In addition to a Basic Rate Interface ISDN-line port, Flash300Plus2 also has two analog ports for telephone or fax connections. The devices detect the type of phone switch connected to the ISDN line. This feature helps users configure the device.*

Arescom's *Flash300Plus2 ISDN terminal adapter.*

Available now, Flash300Plus2 costs $379.

✆ Arescom: (510) 445-3638

■ **Alcatel Data Networks, Inc.** *recently introduced the 1100 QIK Series 800* **voice packet exchange,** *a remote access switch that supports voice and data over frame relay. The modular chassis has four slots and option cards including PBX-frame relay voice, frame relay, ISDN and T-1/Primary Rate Interface ISDN. The chassis comes with a 10M bit/sec Ethernet port.*

Available in the second quarter, the 1100 QIK 800 ranges in price from $5,000 to $19,000.

✆ Alcatel: (703) 724-2000

Cisco rolls out high-density dial access system

By Jim Duffy
San Jose, Calif.

Cisco Systems, Inc. last week unveiled a product that will help users deploy virtual private networks (VPN) and keep them from being disconnected from the Internet.

Cisco unveiled the AS5800, a high-end dial access concentrator for service provider points of presence. The AS5800 is designed to allow enterprises to deploy multimedia applications and take advantage of VPN and quality-of-service (QoS) offerings from their service providers.

The AS5800 combines a 14-slot dial shelf, housing up to 720 modems, and a Cisco 7206 router. The AS5800 also features up to 24 ISDN Primary Rate Interfaces and channelized T-1/E-1 interfaces. When configured in a Cisco AccessPath stack, the AS5800 can support tens of thousands of modems and 500 PRIs, Cisco said.

The AS5800 *sports 720 modems and 24 PRIs.*

Each AS5800 modem card houses 72 modems, while the T-1/E-1 cards sport 12 ports. All AS5800 modem cards are hot-swappable, which means users can replace modem hardware without taking the system down. The system is designed to provide 99% availability, or about five minutes of downtime per year, Cisco said.

The AS5800 router shelf runs Cisco's IOS 11.3 routing software and all of the QoS and dial VPN features, such as NetFlow, the Resource Reservation Protocol, IP precedence, weighted fare queuing, Layer 2 tunneling protocol, Layer 2 Forwarding and IP Security. The router shelf also can support Fast Ethernet, serial, High-Speed Serial Interface, ATM and Packet-over-Synchronous Optical Network (SONET) backhaul trunks.

The router shelf can be upgraded to support a Cisco 7500 or 12000 Gigabit Switch Router, Cisco said.

The AS5800 also supports Signaling System 7 (SS7), which enables users to integrate and interoperate with large-scale voice infrastructures in the public switched telephone network (PSTN). With SS7, the AS5800 also can off-load voice switches in the PSTN.

Managing traffic

For management, Cisco rolled out the SC3640 System Controller for the AS5800. The SC3640 provides local data collection and parameter monitoring so WAN links are not backed up with management traffic.

Cisco has been steadily gaining share in the dial access concentrator market. Through the third quarter of 1997, Cisco held a 14.9% share of the $437.8 million in worldwide access concentrator revenue, up from 14.2% in the second quarter of 1997, according to Dell'Oro Group, a consultancy in Portola Valley, Calif.

Cisco's rivals in this market are Ascend Communications, Inc. and 3Com Corp. Ascend lost market share between the second and third quarters, dropping from 36.5% to 29%, while 3Com rose from 35% to 41%, according to Dell'Oro. For the fourth quarter, Dataquest, Inc. projects that Cisco's revenue will rise by 53% sequentially, while 3Com's will drop by 20% and Ascend's will decrease by 8% on a sequential basis.

Cisco hopes the AS5800 will help it eventually overtake Ascend and 3Com. The AS5800 is available now and costs $515 per port.

✆ Cisco: (408) 526-4000

Multivendor 56K modem compatibility questioned

By Tim Greene

While the battle over a 56K bit/sec modem standard essentially is over, it still is uncertain when 56K modems will be able to successfully communicate with one another.

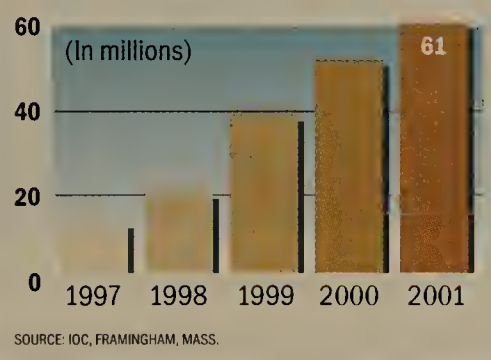
Of the three major 56K bit/sec modem technology vendors, only two, 3Com Corp. and Rockwell Semiconductor Systems, have announced that their modems will interoperate (*NW*, Feb. 23, page 7). Lucent Technologies, Inc. is the third major vendor, but so far it has failed to announce interoperability with anyone, and the company won't say why.

Thus the goal of users buying off-the-shelf 56K bit/sec modems without having to worry about whether they will work with other 56K bit/sec modems remains just out of reach.

The 56K bit/sec modem market had been divided between 3Com's x2 modem technology and K56flex technology jointly supported by Rockwell and Lucent. All now have agreed to upgrade to the preliminary standard approved last month known as V.90.

V.90 specifies how a modem connected to a telephone network over a regular analog voice line can receive transmissions at about 52K bit/sec from a modem that is connected to the network by a digital line, such as a T-1 or ISDN. The 56K label is a misnomer; power restrictions prevent full 56K bit/sec throughput.

56K BIT/SEC MODEM SHIPMENTS FORECAST



SOURCE: IOC, FRAMINGHAM, MASS.

V.90 is all but certain to be adopted as the standard in September. Most vendors plan to upgrade to V.90 before then, making interoperability the next issue to be dealt with.

Right now, it is unclear what the 3Com-Rockwell interoperability claim means.

According to Burk Murray, a 3Com product line manager for modems, the claim does not necessarily mean that all modems based on the two companies' technologies will work together. However, Moiz Beguwala, vice president of personal computing for Rockwell, said it means they will.

Modems made with Rockwell chips and code may or may not work with 3Com-based V.90 modems, Murray said.

"I can't vouch for products that haven't been made yet based on Rockwell chips. Modem vendors need to do testing," Murray said. Interoperability simply means that 3Com and Rockwell prototype modems work together, he said.

In practice, the bulk of modems made with Rockwell and 3Com technology should work with each other, according to Abner Germanow, an analyst with International Data Corp., in Framingham, Mass.

Germanow advised users to do nothing now if they have 56K bit/sec modems that connect successfully with an Internet service provider or corporate network at optimum speeds. ■

Vendor adds Clever ways to watch SNA and TCP/IP performance

By Marc Songini
Redwood City, Calif.

Improved management tools from Applied Expert Systems, Inc. (AES) promise to help users more easily manage TCP/IP and SNA networks.

The company recently introduced new versions of its mainframe-based Clever TCP/IP and Clever SNA performance management software that can help users diagnose problems and manage the performance of devices in either environment.

Both products consist of an MVS-based server application, which resides on the mainframe and tracks SNA or TCP/IP traffic coming through VTAM. A client application runs on any Windows workstation.

The major product changes can be found in the Clever TCP/IP 1.2 rollout. AES has added an Operations Manager component that can track problems such as "hung" File Transfer Protocol (FTP) sessions, TCP/IP storage or buffer shortages, and response times in excess of user-defined thresholds.

These problems are displayed on the Clever client or can be programmed to kick off and automate a response, such as restarting a failed session using the mainframe's automation routines, said Catherine Liu, president of AES. Clever data also can be fed to a central management platform such as Hewlett-Packard Co.'s OpenView.

Clever TCP/IP also can ping downstream network devices, such as routers or servers, and compile statistics on their performance so IT managers can conduct trend analysis, Liu said.

The software can now monitor up to 1,200 devices, up from 110 in the previous release.

PROFILE: APPLIED EXPERT SYSTEMS, INC.

Founded:	1992
Headquarters:	Redwood City, Calif.
Management:	Catherine Liu, president
Financials:	Privately held
Employees:	20
Main products:	AES Clever Solutions software, for managing mixed SNA and TCP/IP networks

Clever TCP/IP is designed to help performance analysts, operations personnel, network system programmers and capacity planners effectively monitor performance and troubleshoot problems, Liu said.

The new package provides critical mainframe workload information on such Internet services as e-mail, FTP and telnet, as well as the socket-attached TCP/IP-based online transaction processing environment.

As the mainframe becomes increasingly tied into the TCP/IP and Internet worlds, it is important that it has the tools to manage performance of the networks it is supporting, Liu said.

For its Clever SNA package, AES added the ability to track IBM Token Ring traffic traversing the mainframe. Users can track sessions, session performance and other components of Token Ring-attached devices.

Both products are available now. Pricing for Clever TCP/IP starts at $20,000. Clever SNA starts at $25,000.

✆ AES: (650) 364-1222

Carriers & ISPs

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Briefs

■ **PSINet, Inc.,** *a Herndon, Va.-based Internet service provider, is expected to announce* **global roaming** *for its Internet access customers. Through an alliance with* **i-Pass, Inc.,** *a global network based on a consortium of ISP networks from around the world, PSINet will offer its customers local dial-in access to 2,000 points of presence in 150 countries. Internet access global roaming lets users avoid costly long-distance or international charges by allowing them to dial in to the Internet with their standard log ons and passwords.*
© PSINet: (703) 904-4100

■ **Gric Communications Corp.,** *i-Pass, Inc.'s primary competitor, announced it is working with* **Cisco Systems, Inc.** *to deploy* **Internet telephony support** *throughout its network. The two companies are developing an interface between Gric's settlement system and Cisco's IOS software, based on the H.323 multimedia standard. The interface will let Gric's Internet service provider partners offer their Internet access customers IP telephony services from 75 countries.*

■ **The New York State Public Service Commission** *is considering action against* **AT&T** *for 371 complaints that the long-distance carrier has been switching customers from other long-distance carriers without authorization. The practice, known as* **slamming,** *is subject to a $1,000 penalty per violation.*

■ **WorldCom, Inc.** *recently announced fourth quarter profits of $142 million on revenues of $2 billion. In the same quarter last year the company reported net losses of $2.14 billion on revenues of $1.23 billion. Positive earnings this quarter could be tempered next quarter when WorldCom is expected to get hit with its $429 million acquisition of CompuServe Network Services.*

Sprint to bolster Internet offerings

Carrier this year looks to add Web hosting, VPN support and more.

By Denise Pappalardo
Kansas City, Mo.

Despite beefing up its Internet backbone with faster switches and more bandwidth, Sprint Corp. is still struggling to piece together a strong Internet service package.

Sprint does offer users intranet, remote access and managed firewall services but has been tentative about attacking the market. The company is looking to become more aggressive and has big plans for 1998.

"This year there will be an emphasis on value-added services including Web hosting, more security and roaming capabilities," said Dominick DeAngelo, vice president of Sprint's network services. Sprint also plans to expand its virtual private network services by partnering with third-party vendors, DeAngelo said.


Sprint's *DeAngelo*

Sprint is looking at voice over everything, not just IP, DeAngelo said. The carrier is evaluating a variety of voice gateways in its labs, but before Sprint decides on products to deploy it must first address traffic prioritization, he said.

The end-to-end prioritization methods that Sprint is looking at include class-based technologies, such as those offered by Xedia Corp. and Packeteer, Inc., as well as IP-over-ATM quality-of-service parameters, DeAngelo said.

To date, Sprint does not offer its customers a Web hosting service, which is probably one of the most significant areas in which Sprint is lacking. DeAngelo attributes this to the fact that the carrier wanted to offer a business-quality Web hosting service that its competitors are not offering today.

"Our research has shown that no one provider is doing Web hosting well; many customers are on their second or third service," DeAngelo said. Business users are looking for more. "If servers go down without a fully replicated server in place, customers lose money," he said.

Filling in its service product line is simply a question of execution because Sprint already has a business-quality network in place.

In the past six months, Sprint has made strides in its IP network by deploying Cisco Systems, Inc.'s Cisco 12000 Gigabit Switch Routers at 10 of its 15 major points of presence. These "GigaPOPs" support OC-12, 622M bit/sec connections. Sprint's other five SuperPOPs are equipped with Cisco 7507 routers that can support up to OC-3, 155M bit/sec connections.

The backbone boost let Sprint offer its Internet access customers new service-level agreements (SLA) last September. The SLAs guarantee that Sprint's network will be available 99.5% of the time. Dial-up Internet access customers are guaranteed that they will be able to access the network 99% of the time without a busy signal. And intranet customers are guaranteed that they will not experience latency greater than 140 msec across Sprint's network.

Sprint has a huge asset in its backbone. In fact, the backbone is probably its strongest selling point, said Joe Bartlett, program manager at The Yankee Group, a Boston-based consulting firm. "But the company still has some work [to do] in servicing business customers," he said.

It seems that Sprint may be spending its dollars on other service development areas, but it is not telling many people about it, Bartlett said. ■

Deal melds existing voice with wireless services

By Denise Pappalardo
Germantown, Md.

Hughes Network Systems, Inc. and AT&T Wireless Services, Inc. last week announced a deal that will let customers use the same telephone at their desks, in their cars and when traveling around the U.S., possibly at one-third of AT&T's current rate.

The companies are coupling Hughes' new AIReach Office system with AT&T's existing Wireless Office service.

The combination for the first time will let users directly connect their existing PBX voice switches to their campus wireless office systems.

The service offers customers an alternative to wire-line office phones. Instead of using a standard telephone at their desk, employees are equipped with Time Division Multiple Access (TDMA)-based wireless phones.

TDMA supports multiple conversation transmissions over a single frequency.

While the companies did not give specific prices, the new service will be priced competitively with per-user PBX charges, promised Michael Radovich, senior product manager at AT&T Wireless.

Wireless office services from AT&T and other providers "typically cost between $1,200 and $1,500 per user," said Bob Egan, research director at Gartner Group, Inc., a Stamford, Conn.-based consulting firm. "[Hughes and AT&T] can and should be competitive with PBX per-seat pricing, which is about $700 to $800 per user," he said.

The companies expect to keep prices down by processing calls more efficiently. Hughes' AIReach system brings all call processing into the customer's network through the AIReach controller, which connects directly to a customer's LAN and PBX. The AIReach system also includes transceivers that send and receive calls.

PBX switches are directly connected to the public switched telephone network. That will let Wireless Office customers using the AIReach system further benefit from their long-distance business rates when making calls to landline phones.

AT&T's Wireless Office service today does not offer the same benefit because all calls are routed through AT&T's network, which is expensive for the carrier and the customer, Radovich said.

Customers can use their TDMA handsets in most locations in the U.S. and still can use four-digit dialing, voice mail, call waiting and hold features as if they were in their offices.

AT&T and Hughes are expected to begin a field trial in the third quarter with general availability expected by year-end.

© AT&T Wireless: (206) 399-8000; Hughes: (301) 428-5500

OFFICE COMMUNICATIONS ANYWHERE

Hughes Network Systems' AIReach Office lets customers use a single wireless handset as their primary office phone, regardless of their location. The system initially will work with AT&T Wireless Services.

AIReach Office includes:

Radio frequency base transceiver stations	System controller
▶ Deployed throughout a customer's building or campus	▶ Supports all call processing, handoff and authentication
▶ Supports up to 11 calls simultaneously	▶ Stores all calling records
	▶ Connects directly to a customer's LAN and PBX

Cellular users may get break on service bills

By Marc Ferranti
Atlanta

If you're tired of paying for all calls coming into your cell phone, you will be happy to hear about efforts being made to change the way you are billed.

The Cellular Telecommunications Industry Association (CTIA), a cellular industry trade association, is asking the Federal Communications Commission to set some ground rules for mobile-phone services.

Contrary to most other countries, mobile-phone users in the U.S. pay for all calls, even those they receive.

The CTIA wants a "calling-party-pays" (CPP) scheme. This plan essentially is the traditional way in which calls have always been paid: The person who does the calling, unless it's a collect call, pays for the call.

The problem is, there are no nationwide ground rules to establish such a plan for cellular users in the U.S., said Thomas Wheeler, president and CEO of CTIA. Wheeler spoke at a press conference on the eve of the Wireless 98 trade show here last week.

The FCC already is undertaking a Notice of Inquiry on the subject, in which it has solicited industry opinion. Now it is time to move on to rule making, according to Wheeler. The CTIA last week officially asked the FCC to make uniform, national rules for CPP services.

The CTIA does not want to make CPP mandatory for all mobile-phone providers, but it does want to establish a basic regulatory framework that would allow any mobile-phone service provider in the U.S. to give customers CPP as an option.

Some large phone companies, such as SBC Communications, Inc., are opposed to federal jurisdiction over CPP, and believe the market will work out CPP ground rules, according to the CTIA.

But supporters said federal intervention should hasten the establishment of CPP in the U.S., which would lead to increased use of mobile phones.

For example, mobile-phone customers using CPP would not have to fear publishing their mobile-phone numbers because they would no longer have to pay for every call they receive, said James Gerace, a mobile-phone services manager with Bell Atlantic Corp., a regional Bell operating company. This in turn would lead to directory-assistance services for mobile phone users, he added.

By listing numbers and providing caller assistance services, calls to mobile phones would likely rise, Gerace said. But this does not mean that revenue for mobile-phone providers will go up too, because competition is expected to cause rates to decline, he said.

Ferranti is a correspondent with IDG News Service's New York Bureau.

Changing cell phone charges

The CTIA is asking the FCC to establish:

- One nationwide standard notification message so callers know they will be billed for a call to a wireless phone
- Access to billing and user name information for mobile-phone providers so they can process calling-party-pays calls
- A mechanism to enforce payment of charges, including "informational" tariff filings
- Jurisdiction over commercial mobile radio service providers

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Time for directory-driven services

Most service providers have changed their business models over the past several years to support managed data services. For many, this was a big step away from pure commodity transmission components toward more holistic net packages.

Now, though, they will have to change again as the next wave of services will be directory-driven, software-based and eventually, content-rich.

While a few providers — such as US WEST, !nterprise and MCI — are taking early aim at this market opportunity, most still are unsure of what directories are or how directories and wide-area services go together, and they need to figure it out.

Microsoft, Intel, Compaq and other desktop and application providers drive the communications and network services market. Service providers simply follow behind — usually way behind.

Today, MIS managers buy network components and build corporate networks. They handle security policy and manage access to network resources and applications. Where are the service providers in all of this? An afterthought. A provider of bandwidth. One piece in a much bigger picture.

What might future services look like if desktop builders and service providers got together? Would it lead to better integration of the network and applications? To begin with, network services would be tied to specific quality-of-service (QoS) levels for performance factors such as availability, latency and throughput.

Daniel Briere and Christine Heckart

In the future, might not the network service provider integrate many of these functions into the network service?

Say TeleChoice hires a consultant. Our HR person assembles the following information in a centralized database: personal contact information such as e-mail and phone; start date; application needs with QoS requirements by application; and access clearance to available network resources.

This information database is linked to a directory maintained by TeleChoice's service provider. Our network services are driven by the directory, so when the new person logs on to their computer for the first time and attempts to access applications or network resources, the following things would happen:

- The user is authenticated
- Security-level clearance is validated
- Access to network or application resources is verified
- The information is delivered back to the user in the form of a directory of available options

Cisco already is moving to make part of this scenario a reality by integrating Active Directory into its operating system.

Now service providers must begin exploring ways to integrate directories with services and tie directories into QoS/service-level agreements, pricing structures and billing systems.

MCI has conducted limited internal Lightweight Directory Access Protocol trials as a means of tying many disparate directory systems together. While this is a good start, much more has to be done.

Briere is president and Heckart is vice president of TeleChoice, Inc., a consultancy in Verona, N.J. They can be reached at dbriere@telechoice.com and checkart@ telechoice. com.

Intranet Applications

Covering: Messaging • Groupware • Databases
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Briefs

■ *Seattle-based streaming media vendor* **RealNetworks, Inc.** *last week announced it will* **acquire Vivo Software, Inc.,** *a maker of streaming media creation tools in Waltham, Mass. Outstanding shares of Vivo will be swapped for 1.1 million new RealNetworks shares, valued at about $17.1 million.*

■ **Allaire Corp.,** *of Cambridge, Mass., has announced its* **Cold Fusion Application Developer Kit.** *The kit contains the Cold Fusion Application Server, a development environment that creates applications for Web sites, and licensing that covers the use of the resulting applications.*

Pricing varies depending on the configuration.

✆ Allaire: (617) 761-2090

■ *Beaverton, Ore.-based start-up* **eFusion, Inc.** *has announced its* **eBridge Interactive Web Response software.** *The software can be used by Web-based businesses and service providers to connect a World Wide Web visitor to a call center over the Internet. Interactive Web Response supports up to 10 phone lines, and pricing starts at $50,000.*

✆ eFusion: (503) 207-6300

■ *In the wake of unexpected losses,* **Sybase, Inc.,** *of Emeryville, Calif., last week announced it would lay off 600 of its nearly 6,000 employees. A spokeswoman said the* **layoffs** *were part of the database vendor's effort to focus on the Internet computing, mobile computing and data warehouse markets. Sybase last month announced restated financials, including a fiscal 1997 loss of $55.4 million, after finding that improper accounting procedures by the firm's Japanese subsidiary led to inflated revenues.*

In-Site

1-800-Flowers plants florists on the 'Net

By Ellen Messmer
Westbury, N.Y.

More than 2,000 florists that have long used the proprietary 1-800-Flowers, Inc. clearinghouse network to get flower orders now are planting themselves on the Internet — but not without some serious worries about unforeseen per-minute access charges.

By transplanting its florist membership to a new, homegrown Web application called Bloomlink.net, the network services division at 1-800-Flowers hopes to uproot a couple of problems associated with the current arrangement, including having to upgrade proprietary client software and the cost of managing private links.

The idea is that each florist will be outfitted with a desktop computer — Windows 95, Macintosh or Unix — and a modem in order to be live on the 'Net round-the-clock via local 56K bit/sec access.

According to Norman Dee, director of network services at 1-800-Flowers, florists will use the Netscape Communications Corp. Navigator browser to get notification of flower orders or to dispatch orders for faraway delivery.

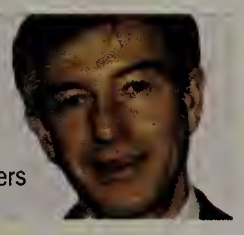
"The florists are going to be online all the time," Dee said. "They need to be because we're starting to offer time-of-delivery guarantees to customers — for instance, we might say we'll deliver it by noon. So the florist needs to know immediately when an order comes in."

They'll even be able to "chat" with other florists or attend online companywide meetings by means of eShare Technologies, Inc. Expressions software.

"The eShare software can be easily interfaced with our order-entry system so we can pass our users from the secure order-processing system into our eShare chat facility without requiring them to re-enter passwords," Dee said.

So far, about 100 florists are up with the Bloomlink.net business-to-business application, and 1-800-Flowers hopes to have another 2,000 up in the next two months.

> ***"A few LECs are charging businesses by the minute for local calls."***
>
> **Norman Dee**, director of network services, 1-800-Flowers



Dee said that 1-800-Flowers has a deal with AT&T under which the carrier will provide round-the-clock Internet access for each florist at a flat rate of $19.95 per month.

Unexpected costs

However, there are clouds on the horizon for Bloomlink.net because some of the local exchange carriers (LEC) have begun levying per-minute charges for local calls made by businesses, though these do not apply to residential customers.

"It's not time-dependent unless it's a business call, and on Long Island here, for example, the rates are five cents for the first minute and 1.8 cents for each following minute," Dee said.

In New Jersey, Bell Atlantic is charging six cents for every five minutes a local business call lasts, which would mean an extra $250-per-month charge for any florist there linked round-the-clock to BloomLink.net.

"It's very upsetting," Dee said. "Here, it's forcing us to put in an automatic disconnection and reconnection of the facilities. But from what I can tell, these time-dependent charges may be the way of the future with the LECs."

Dee already is considering alternatives for bypassing the LECs, such as Internet cable or satellite dishes. ■

Tetranet touts search engine alternative

Wisebot indexer offers users a list of Web site keywords.

By Sandra Gittlen

A Canadian firm said it's figured out the answer to an increasingly thorny World Wide Web development problem: keeping track of all the information on your site.

Tetranet Software, Inc., of Ontario, said its Wisebot indexer can cull through the files on a site and create a common-word index that lets users easily locate information.

"This product is geared toward power-site developers so they can manage large amounts of pages, as well as basic Web page developers that can't license a search engine or build a Common Gateway Interface script," said Tetranet President Michael Weider.

Wisebot creates intelligent indexes in a two-step process. First, it uses a spider to map out the information in documents on a given Web site.

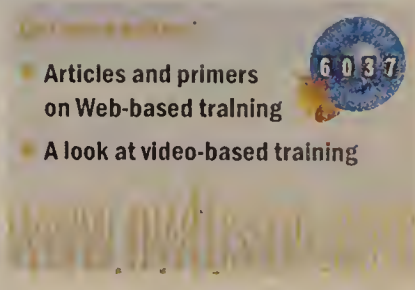
Then, instead of parsing every word in a document like a search engine spider would, Wisebot, with proprietary technology from the Institute of Information and Technology in Ottawa, uses an algorithm to figure out what words best describe what a document is about, Weider said. It enters only those words — usually three or four per page — into the database. Then it creates a keyword index of combinations of words based on those entries.

Wisebot can also be set to sort through information from several sites at once to create a metaindex, combining all the keywords from its search. This is particularly helpful for Web developers of intranets and the Internet, allowing them to offer employees a complete index of both sites at once. These indexes can be edited on the fly, as well.

The tool creates a site map that displays a directory tree of a site and lets users hyperlink to specific pages. It also creates a What's New page that dynamically lists new additions to a site.

Additionally, a channel option lets users have the What's New page pushed to them whenever there is an update.

Wisebot will be available in March for $500 and will process up to 1,000 pages. The company within the next year will release another version that will handle more pages and be integrated with high-performance databases that can manage the indexes, Weider said. ■



NET INSIDER

It's so hard to know you

The biggest computer and network security problem yet to be solved is coming up with a sure way to determine who a particular user is.

Most computer technology users are not individually identified beyond having physical access to a PC. This is far from sufficient in business environments or on the Internet.

In these cases most users prove their identity by knowing a few facts. Knowledge of a log name and password, often buried deep in some auto-login script, is all that differentiates one user from another. If you use a security system like this and if I were to find out your logname-password combination, I could pretend to be you. Your system would not be able to keep me from doing anything that you are permitted to do.

Many approaches are being tried to augment this loose level of identification. Most common is the use of physical tokens along with some piece of knowledge.

Automated teller machine cards are a simple example of this. Someone stealing your card would not be able to use it without knowing the associated personal identification number. One problem with this type of system is that people can lose their cards. It would seem to be ideal to be able to use something that the individual would have a very hard time losing, such as a body part.

There has been a lot of work on biometrics, the technology of using physical characteristics to identify individuals. All sorts of systems are available using fingerprints, voice recognition, hand profiles and retinal scans. (You've probably seen the retinal scan units — you look into a little hole and if you are not the right person it pokes you in the eye.) Unfortunately, a consistent problem with biometrics systems is that they have a high reject ratio — they tend to misidentify people too often.

Scott Bradner

In the early '90s John Daugman, then an assistant professor at Harvard University, showed me results from some of his experiments involving the use of iris scans to identify people. He showed that these scans could produce very reliable identification.

Since then, John has moved to Cambridge University across the pond, and perfected his ideas. His technology compresses information about an iris to just 256 bytes, permitting easy storage of the data and scanning of databases holding information on large numbers of individuals. His technology is now starting to show up in the marketplace.

Iris scans seem like a good candidate for computer and network security since they are much more definable than fingerprints and do not change as people age. (It is also a bit harder to alter one's iris if one wants to hide his or her identity.)

One additional advantage is that iris checkers can include a light that varies in intensity to normalize the pupil diameter. This can make the categorization of people even more accurate as well as ensure that Joe is still attached to his eyeball. Attempting to log on with dissociated body parts could be a problem with fingerprint or hand profile systems.

Disclaimer: Other than in the medical school, Harvard does not look longingly at eyes, i.e. the above are my own observations.

Bradner is a consultant with Harvard University's University Information Systems. He can be reached at sob@harvard.edu.

Technology Update

Covering: Evolving Technologies and Standards

NUTTER'S NETWORK HELP DESK

Ron Nutter, a Master Certified Novell Engineer and Groupware CNE in the Lexington, Ky., area, tracks down the answers to your questions. Call (800) 622-1108, Ext. 7476, or send your questions to rnutter@world.std.com.

I'm hoping you can help with a bizarre problem I've been having in Windows 95. Whenever I right-click on a desktop icon then click Properties, Explorer crashes with the error message: "Explorer caused an invalid page fault in module KERNEL32.DLL at 014f:bff798e9."

My system has a 200-MHz Pentium overdrive chip, 48M bytes of RAM and more than 7G bytes of disk space, so capacity isn't a problem. Microsoft Corp. technical support suggests that my registry might be too big, but my user.dat file is only 385K bytes and my system.dat file is only 2.7M bytes.

Tech support says I should reinstall Windows 95, but I really don't want to because I've got so many programs on my PC. Do you have any less-drastic recommendations?

Via the Internet

I can recommend several options. First, download the REGCLN41.EXE file from Microsoft at support.microsoft.com. This tool will help clean the registry of unneeded items. But before using this or any other registry cleaning tool, be sure to get a good backup.

Also, if the version of Windows 95 that you are using is earlier than Rev A, apply Windows 95 Service Pack 1. Look in the System icon in the Control Panel to figure out what version you're using.

I checked the size of my user.dat and system.dat files, and both are larger than the sizes you report. The system.dat file, in fact, was almost double in size. This leads me to think that your files may be corrupted to an extent.

You also are probably using a machine that came preinstalled with Windows 95. This means that if you find a Windows Options Cabs (or similar name) directory on the PC, you can try reinstalling Windows 95 without having to reformat the hard drive.

With this type of reinstall, you have a good possibility of not having to reinstall any software.

How to size up security of a virtual private net

By Stuart Lombard

Distributed computing, client/server technology, remote access and interconnectivity have each played a role in making companies and workers more productive than ever.

At the same time, corporations are looking for flexible and secure ways to extend their data networks to remote users, business partners and customers.

For many companies, virtual private networks (VPN) are the most inexpensive way to tie remote users to the corporate backbone.

VPNs can solve business problems and boost a company's bottom line. Consider one organization that supports 450 remote users around the world. This company is spending about $100,000 per month in dial-up long-distance charges.

By moving to a VPN, remote users connected to any local Internet service provider can create secure tunnels through the Internet and gain access to company resources. This eliminates long-distance charges and the need to invest in and manage remote access equipment, which reduces ongoing monthly charges to about $15,000 per month.

While costs can be reduced, users must be confident that the VPN environment is secure.

Customers, such as the Automotive Network eXchange (ANX), are looking at ways to use VPNs to beef up security and simplify the way users and their business partners are connected.

For example, the ANX will provide automotive trading partners with a single, secure network for electronic commerce and data transfer. This network will replace the complex, redundant and costly multiple connections that currently exist throughout the automotive supply chain (see www.aiag.org/anx for more information).

A VPN is a network tunnel created for encrypted data transmission between two or more authenticated parties. It ensures data privacy, integrity and authenticity. The key components of a complete VPN are confidentiality, strong authentication, routing and tunneling, automated key management, performance and standards implementation.

Confidentiality ensures that no one can view or modify the data while it is being transmitted across the network.

When choosing a secure VPN, make sure it uses a proven encryption method and encryption keys longer than 90 bits. Advances in technology used by hackers will reduce the longevity of a secure VPN if its encryption algorithms are weak or its encryption key lengths are too short.

The ability to positively authenticate networks, servers and users is a vital aspect of a secure VPN. Password protection is easily broken and inherently insecure. X.509 digital certificates are becoming the de facto standard for authentication because they provide significantly stronger authentication than traditional password-based schemes. Make sure X.509 is part of your VPN plan.

The degree to which a VPN incorporates routing and tunneling will directly affect the ease with which it may be securely integrated into existing network environments.

Tunneling — encapsulating an encrypted packet inside a new packet with a new header — is the only way to access an unrouted IP network across a public network such as the Internet. Tunneling also allows VPN solutions to seamlessly integrate with existing firewalls.

Automated key management eliminates day-to-day management of a VPN. Using automated key management, a system administrator may define automatic expiration periods for encryption keys as well as digital certificates. Many providers of VPN packages require administrators to manually enter encryption keys on each device within the VPN.

But manual encryption rapidly becomes unmanageable as the business grows. Imagine trying to manually change the keys on 100 or 1,000 devices every day!

It is vital for a secure VPN to include automated key generation and management, a random number generator that does not reveal keys, and a secure operating platform that cannot be modified. The ability to set key expiration periods also is important to ensure that keys are automatically recycled at set time intervals. The expiration periods greatly inhibit the ability to break keys and gain access to proprietary information.

Encryption is a computationally intensive task. Depending on your performance requirements, VPN solutions that provide software-only encryption may not be sufficient. A robust VPN will provide the option of adding a hardware accelerator to perform the encryption/decryption functions, resulting in throughput speeds that match regular network capacity.

IP Security is a set of multivendor security standards that are currently being developed by the Internet Engineering Task Force. While the standards are still being solidified, it is important to choose a secure VPN that is designed in accordance with these standards so it will integrate with your network security infrastructure in the future.

When choosing a VPN provider, you also should consider objective third-party evaluation by a recognized authority such as the National Computer Security Association at www.ncsa.com.

Lombard is vice president, marketing, for Isolation Systems, Ltd., a vendor of secure VPN products. He can be reached at (416) 622-7500 or stuart@isolation.com.

HOW IT WORKS

VPN security components

There are three central elements of secure VPNs: authentication, encryption and integrity or confidentiality. The bottom line: VPN users must be assured that data is protected and cannot be nefariously intercepted.

Need information?

Let *Network World* provide a quick primer on an important or emerging technology. If you have an idea for Technology Update, contact Michael Cooney by phone at (508) 875-6400 or e-mail at michael_cooney@nww.com.

EDITORIAL *insights*

How you can deal with your own high-tech labor crisis

The high-tech industry faces a staffing crisis, one that has gotten the attention of even the federal government. The feds are considering raising the number of visas allowing skilled foreign workers to enter the country, a controversial plan that could put the Clinton administration at odds with organized labor.

The Information Technology Association of America (ITAA) recently reported that one-tenth — nearly 350,000 — of all IT jobs are open as employers desperately search for qualified candidates. Your company is probably a microcosm of the industry. You struggle to fill jobs and to keep your best workers. You have to pay more and more to find and hold on to employees. Loyalty seems a thing of the past.

But it doesn't have to be that way, says Jeffrey Pfeffer, a professor at Stanford University's Graduate School of Business and the author of books including *The Human Equation: Building Profit by Putting People First* (Harvard Business School Press, 1998). Pfeffer, who spoke at an industry gathering I attended last week, says innovative companies are keeping turnover low and boosting productivity and profits by avoiding conventional wisdom about running a high-tech shop.

He says too many companies stress the notion that employees are responsible for their own development, that they must keep themselves "employable." Companies also use money as the key motivator, perhaps not knowingly but by paying large signing bonuses, using lots of stock options and emphasizing individual, rather than team, incentives. Corporations focus on cutting labor costs by using contractors and ratcheting staffing up and down as business changes.

Pfeffer cited research showing that cutting labor costs is a poor way to improve profits. Worse, following the conventional wisdom creates an adversarial relationship. It tells employees you don't trust them and that they better be looking out for themselves. It's no wonder they leave when something more lucrative crops up.

If you want your people to be committed to you, you have to prove you are committed to them, Pfeffer says. You must invest in training and skills development, not just talk about it. Share information about the company with everyone, not just the elite. Encourage teamwork by measuring achievements and rewarding everyone, not just the superstars. Get rid of status differences and get out of your office to spend time with people. Don't reward managers who treat people like dirt just to get things done.

It ain't rocket science. But only a handful of companies really practice those ideas. That's why they don't face the staffing problems everyone else does.

John Gallant, editor in chief jgallant@nww.com

Security Issues • Bruce Schneier

Security for remote access VPNs must be simple

Before you even think about using a virtual private network (VPN) for remote access, consider the security changes that will need to be made.

Unlike site-to-site VPNs, where remote offices are hard-wired to a central facility firewall, remote access VPNs are fraught with security problems. Much of the security consists of trusted passwords that traveling workers use on their notebook computers.

To be effective, a VPN's security implementation must be user-friendly while not penalizing your enterprise in other ways, such as by degrading network performance or compromising corporate control of the remote access network.

Think of the lock on the front door of your home. It certainly is easy to use, and it doesn't force you to endure undue hardship to install, maintain or control.

But what if you found out your front-door lock was not really secure? How much of a burden are you willing to endure to ensure the security of your home?

Most people are not willing to inconvenience themselves much for security. If a truly secure front-door lock required a key holder to fiddle with it for 10 minutes, many people would not bother to lock their doors.

Today's VPN users face a similar situation. VPN security has improved, but at the expense of usability and network performance.

First-generation VPNs were based on routers and other network infrastructure products, with secure tunnels confined to the boundaries of the Internet. They delivered predictable bandwidth for site-to-site connections and were easy to use. However, they lacked the end-to-end security needed to safeguard dial access ports exposed by remote users.

To address the problem, several network security companies developed a second generation of VPNs that extend security to the remote edge of the enterprise network. But while second-generation VPNs succeed in providing end-to-end security, they lack the performance benefits of the first-generation products. This only makes sense when you consider how unlikely it is that a single server could provide wire-speed tunnel aggregation for 200 or more remote users while simultaneously performing high-speed firewall packet filtering to safeguard the corporate network.

In addition, the security mechanisms of second-generation VPNs are harder to use. Remote users must gain access to the corporate network through higher level mechanisms suitable for a firewall, such as digital certificates and certificate authorities.

For many people, learning to use these sophisticated security mechanisms is like having to learn a whole new way of opening their front-door locks.

So where do we go from here? The first order of business is to determine what the next generation of VPNs — the operational remote access VPN — should be securing.

The only role of a remote access VPN is to allow someone at a remote location to tunnel into the network's front door. It's the user's job to log on with a secure password or authentication device, and it's the corporate network firewall's job to grant or deny permission.

In effect, all the next-generation VPN should do is collapse the space between the remote user and the corporate network. That means the security of the client computers and the enterprise network must be dealt with individually. It's the only inexpensive and operational model for a remote access VPN that provides secure network connections and usability.

In the end, many security systems are broken by the people who use them. Most users want simplicity, convenience and compatibility with existing (insecure) systems. It's hard to sell door locks to people who don't want to be bothered with keys.

Schneier is president of Counterpane Systems, a Minneapolis-based cryptography and computer-security consulting firm. He can be reached at schneier@counterpane.com.

MESSAGE QUEUE

Send letters to nwnews@nww.com or John Gallant, editor in chief, Network World, *161 Worcester Road, Framingham, MA 01701. Please include phone number and address for verification.*

Ship shape

Your feature article on laying trans-Atlantic cable was engrossing ("Atlantic crossing," Feb. 9, page 49). Thank you for describing in such a picturesque way what to many of us was a mystery. You deserve to win several awards for this outstanding story.
Kirk Mahoney
President
Engaging Media
Houston

Moot point

Regarding Kevin Tolly's column "Token Ring: Already built for gigabit speeds" (Feb. 9, page 38):

There goes the neighborhood

Over the past decade, I've watched with great interest as Compaq, the PC company that's literally in my Houston backyard, has transformed itself into one of the world's largest computer vendors. Currently ranked No. 5 in the world, Compaq will leapfrog into the No. 2 spot when its acquisition of Digital gets the official go-ahead, probably this summer.

The acquisition came as little surprise, as Compaq and Digital have attempted to consummate this marriage before. In fact, Compaq already uses Digital to fulfill many of its enterprise service and support agreements around the world. Compaq couldn't build its own service business fast enough, so buying an experienced provider looked like the best option.

Most analysts agree this deal is good for both Compaq and Digital. Through the acquisition, Compaq rounds out its product and service offerings, greatly enhancing its ability to compete for enterprise-level business. Digital has faced financial uncertainty for several years, and Compaq should prove to be its white knight. Together, they have great synergy that will make the combined company a force to be reckoned with.

Corporate customers should derive plenty of benefits from this merger, as well.

Customers should see a marked improvement in the level of "touch" they get from the post-merger company. Digital brings thousands of seasoned account executives and service representatives to the party, so customers large and small should get more attention. Especially important are Digital's 1,800 Windows NT-certified systems engineers and 3,000 Unix specialists, who bring a wealth of experience in integrating and optimizing enterprise applications. What's more, these employees are all over the world, vastly improving Compaq's global reach.

While current Digital customers may fret that their fate could suffer in the hands of Compaq, I say it should improve. Compaq's deep pockets and enterprise focus should breathe new life into Digital's high-end product lines, including Digital Unix and OpenVMS. Many believe it's a foregone conclusion that Digital's PC product group will disappear, but Compaq's PC division offers better products, anyway.

Furthermore, the deal should spur competition and drive prices down. A well-rounded Compaq can compete more effectively against IBM and Hewlett-Packard, the only other computing companies to offer a full range of products and services. Customers seeking a soup-to-nuts solution can pit one company against another to get the best possible deal.

As for prices, Compaq CEO Eckhard Pfeiffer boasts that Compaq — without Digital — already enjoys competitive pricing from its suppliers, allowing Compaq to lower prices while sustaining profits. With the acquisition of Digital, Compaq will have additional leverage to encourage even lower prices from its supply chain. The customer clearly will be the winner here.

The new, mightier Compaq also should have more leverage with its two main business partners, Microsoft and Intel, and the myriad independent software vendors (ISV) that make a living off the Wintel market.

Today, Compaq and Digital enjoy close relationships with Microsoft. Operating as one company, they will collectively have more Windows NT integration experience than any other computer maker. Compaq's No. 2 worldwide sales position should make Microsoft and other ISVs even more interested in working hand-in-hand with it.

With the acquisition of Digital's Alpha microprocessor business, Compaq's relationship with Intel grows more complex. Last year, to settle a lawsuit, Intel purchased Digital's chip manufacturing operations, licensed the Alpha patents and agreed to continue to manufacture the processor for several generations.

The agreement is expected to hold up under Compaq's ownership of Digital.

But ownership of the Alpha technology gives Compaq an ace in the hole. While Compaq's current road map takes an Intel path into the realm of 64-bit computing, having Alpha gives Compaq some alternatives for its high-end servers. If nothing else, Alpha should give Compaq some leverage with Intel for negotiating future deals.

All things considered, the acquisition will benefit corporate customers in the long run — if Compaq and Digital don't get bogged down by the details of forming one cohesive company out of two.

Merging the product lines is easier than merging the people. Since acquiring Tandem last summer, Compaq has done a good job of integrating Tandem's products and employees, but Digital is a larger beast. What's more, Compaq and Digital have competed on many battlefields. It will take a while to get everyone marching in the same direction.

In the meantime, I'll be watching out my back window as the ever-expanding Compaq campus takes over the neighborhood.

Musthaler is vice president of Currid & Co., a Houston-based technology consulting firm. She can be reached at linda@currid.com.

The cold war between the Ethernet and token-ring factions is over — and switching won. Anyone who thinks Layer 2 differences such as frame formats, source routing vs. spanning tree bridges or native support for priority classes have any architectural importance is living in the wrong era. Today, the right way to plan a gigabit-speed campus backbone is to ignore such Layer 2 issues altogether. Simply create a suitable mesh network consisting of point-to-point, full-duplex links between switching nodes that are sufficiently intelligent bit shufflers and call it a day.

Today nobody cares about differences in physical-layer encoding between various products. Similarly, nobody should care whether their IP or IPX datagrams happen to get encapsulated in media access control frames that obey the Ethernet or token-ring standard. More important, there is no reason why the exact bit-shuffling algorithm used in a switching node should be tied in any way to some dusty visions of enterprise networking from almost 20 years ago.

ATM vendors got it right when they said their bit shufflers could base their decisions on end-to-end application flows. The Gigabit Ethernet backbone switches *Network World* recently reviewed in "Gigabit Ethernet is good to go" (Jan. 26, page 45) can do the same by looking at the Layer 3 and Layer 4 information in the datagram header. Neither spanning tree nor source routing is relevant to a Layer 3 switch, and token ring's eight levels of priority seems rather quaint in an era where switches can separately manage over 100,000 individual Layer 3 and 4 flows.

Mart Molle
Professor of computer science and engineering
University of California
Riverside, Calif.

Tolly replies: Given that virtually all of the Gigabit Ethernet switch vendors I've spoken to care about the issues my column addresses, we must all be living in the wrong era. I admit, grappling with basic elements such as optimizing packet size is not nearly as uplifting as theorizing about switches that can manage over 100,000 Layer 3 and 4 flows. (By the way, was that tested?)

Choice is the issue

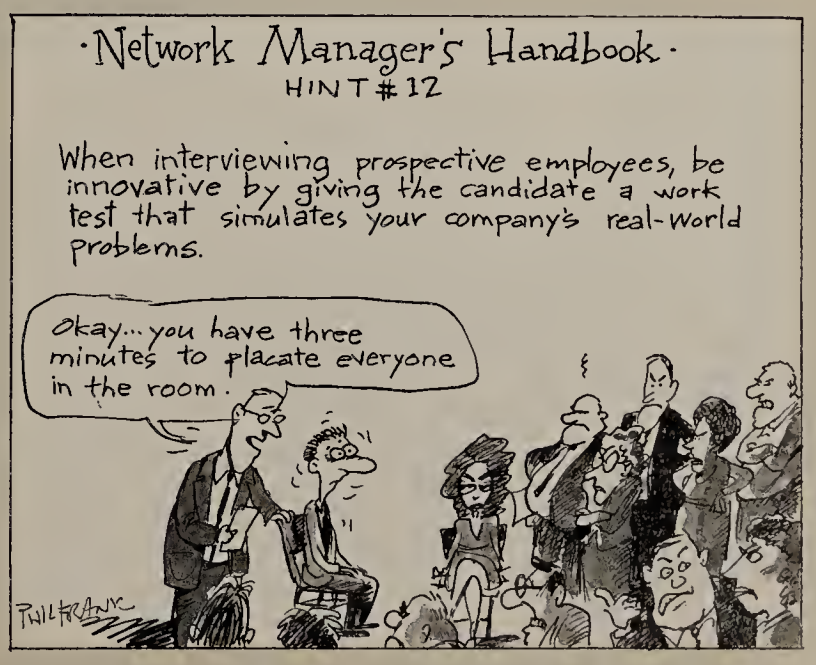
Regarding Mark Gibbs' column "What if Microsoft sold landscape lighting?" (Feb. 2, page 57):

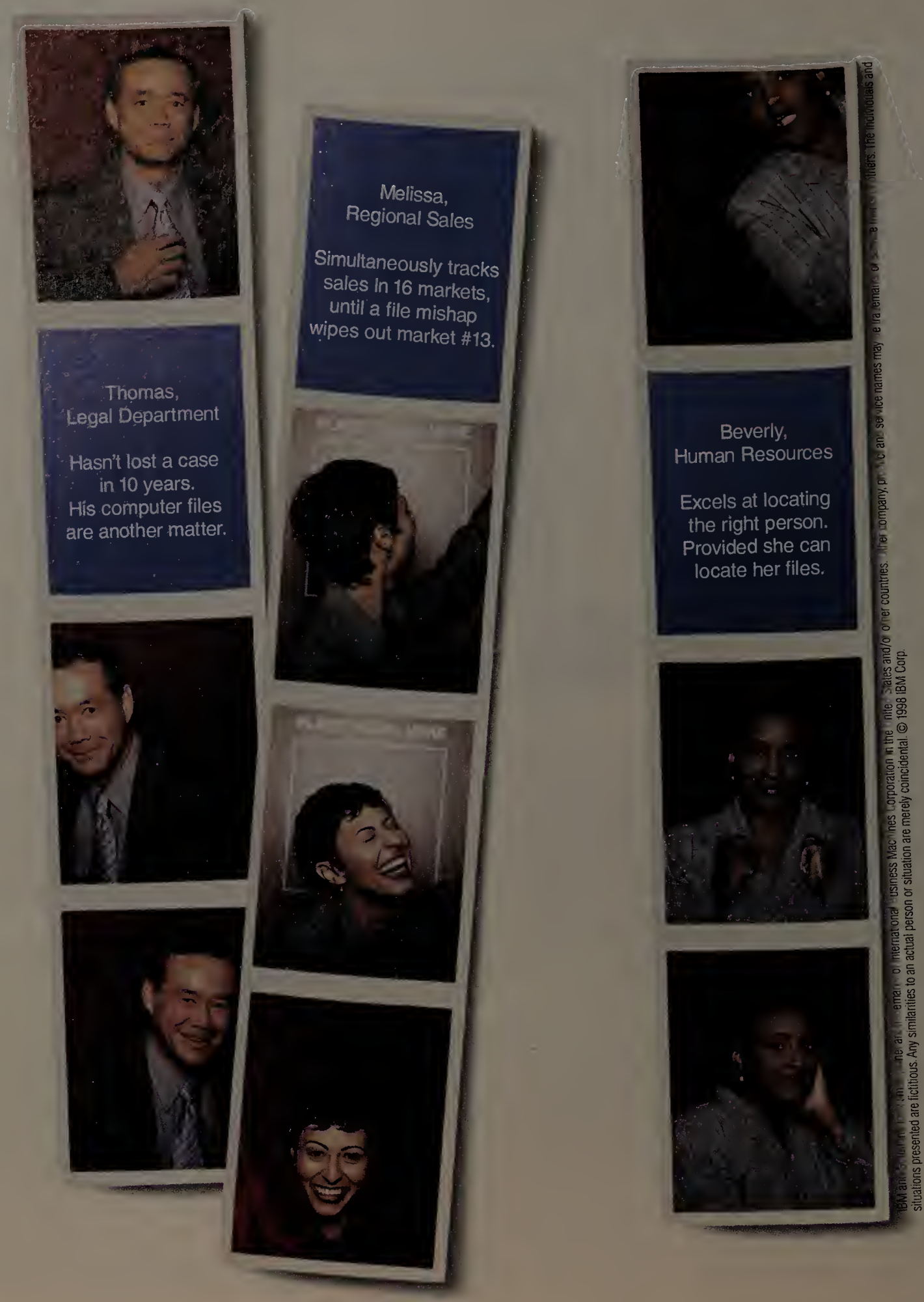
Whether your landscape lighting is a certain grade or not, you have many alternatives from which to choose. No matter what people say about Warp and Apple, there is no real choice among operating systems for computers.

How much more control does Microsoft need to command before it does need to be looked into?

Charlie Wohlberg
Project manager
The Lan Co.
New York

Teletoons





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FEATURE

"FABLESS SEMI" FIRMS ARE BUILDING NET FUNCTIONS INTO SILICON, PAVING THE WAY FOR LOW-COST GEAR.

The fabless phenomenon

By Todd Wallack

In a sunny office tucked away in Framingham, Mass., a small group of engineers is quietly designing chips for Cisco Systems, Inc.'s flagship routers. As they work, the engineers sketch out block diagrams with markers, creating a tangle of digits, acronyms and arrows. It looks like a football play where the players are bits of code scrambling for touchdowns in a silicon stadium.

But there is no Cisco sign out front. And the engineers, who work in a start-up just upstairs from a sand and gravel company, are also working on nearly identical chips for 3Com Corp., Bay Networks, Inc. and other network equipment giants.

Welcome to Maker Communications, Inc. and the world of fabless semis. Scores of firms you've never heard of are quietly creating low-cost chips that handle all kinds of network functions, from physical connections to wire-speed routing. Like Maker, most of the firms design semiconductors — or semis in industry parlance — but hire outside foundries to fabricate them, hence the term fabless semis. Most of these firms are relatively small, but the effect they may have on the network industry is anything but.

"These guys are building the

William Giudice of Maker Communications *gets up close and personal with his company's latest chip — the MXT3010 Cell Processor.*

CHRISTOPHER FITZGERALD

A SAMPLING OF FABLESS SEMI PLAYERS

Name	MMC Networks, Inc.
Based	Sunnyvale, Calif.
Founded	1992
1997 Revenue	$21.9 million
CEO	Prabhat K. Dubey
Product Focus	LAN and WAN switch and router chips handling ATM and Fast Ethernet
Comment	Receives half of its revenues from Cisco.

Name	I-Cube, Inc.
Based	Campbell, Calif.
Founded	1990
1997 Revenue	$2.5 million
CEO	George Kern
Product Focus	Fast Ethernet switch sets, programmable chips for dynamic bit/bus switching and static routing/interconnect
Comment	Touts its cross-bar design, consolidation of switching functions.

Name	Maker Communications, Inc.
Based	Framingham, Mass.
Founded	1994
1997 Revenue	$5 million to $10 million
CEO	Bill Giudice
Product Focus	ATM switch chips
Comment	Claims contracts with Cisco and three of the other top internetwork equipment vendors, as well as with several telecom companies such as Northern Telecom.

Name	Broadcom Corp.
Based	Irvine, Calif.
Founded	1991
1997 Revenue	Not available (but said to be eight figures)
CEO	Henry Nicholas
Product Focus	Digital physical-layer Ethernet chips and chips for cable modems and set top boxes
Comment	Received lots of attention for work in cable modems and set top boxes. Planning an IPO soon.

next generation of LANs," says Frank Dzubeck, president of Communications Network Architects, Inc., in Washington, D.C. Dzubeck believes the firms are gradually turning network chips into a commodity, where price is the only thing that matters. In the process, they are forcing the likes of Cisco and Bay Networks to focus more on service, distribution and advanced software features. "It's moving the battleground upscale," Dzubeck says.

Moreover, by focusing on network technology, the fabless semi companies could spawn a slew of start-ups that can churn out low-cost hubs and switches by packaging specialized chips with off-the-shelf power supplies and casings — the network version of PC clone makers.

"This provides a low-cost alternative that is ideal for companies that don't have the resources to design the chips themselves," says Diane Myers, a senior analyst with In-Stat, a semiconductor market research firm in Scottsdale, Ariz. "They can get to market quickly and offer equipment cheaply."

Fabless players

To be sure, fabless semi companies are nothing new. In fact, there is a well-established trade group, the Fabless Semiconductor Association, that has 160 member companies. But more and more of those companies see an opportunity to build network functions into silicon. The fabless group estimates 64 of its members, or 40%, are involved in the network industry.

Maker is one of these upstarts. Despite the prowess of the big network equipment vendors, which also design their own silicon, 3-year-old Maker was the first to come up with a chip that could convert data between cell and packet formats at speeds up to 622M bit/sec.

In a business where time to market is of the essence, none of the big equipment vendors wanted to risk using a slower chip or take the time to develop equivalent technology on their own. Consequently, you can already find Maker's CellMaker chip in Cisco's 12000 (formerly known as the BFR) and Catalyst 5000 products, among others. Cisco, Bay and 3Com all confirmed that they signed deals with Maker in order to quickly get the cell-to-packet conversion feature in their products.

"In some ways they are pushing the envelope," says Bob Lapointe, Bay's senior manager of value engineering. He confirmed Bay has a relationship with Maker, but declined to identify specific products involved.

Maker's founder Bill Giudice says his company's early sales — $5 million to $10 million last year — are only the beginning. Equipment vendors are just starting to buy network chips from outside designers, and he expects the market to boom. Maker even has its sights set on an initial public offering (IPO) sometime in 1999 or so.

Another fabless semi company that has grabbed analysts' attention is MMC Networks, Inc., in Sunnyvale, Calif. Though not the largest of the fabless companies, MMC claims it has designed 35 products for more than 27 network equipment vendors. Its ATMS2000 chip, for instance, is used in Cisco's low-end ATM switches.

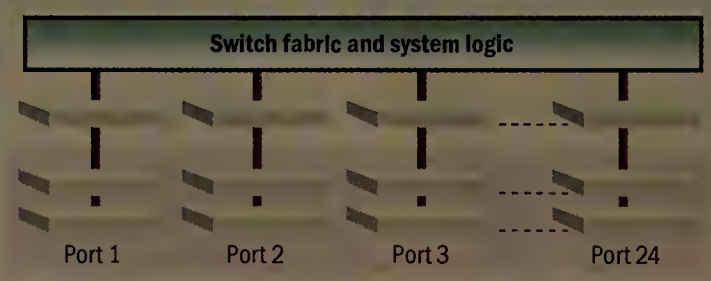
The Cisco deal, in particular, helped give MMC enough momentum to launch an IPO in October. The company issued 4 million shares for $11 each, raising more than $40 million after fees. The company grossed about $10.5 million in 1996 and more than doubled that mark in 1997, with $21.9 million in revenue. Profits nearly doubled last year to $1.2 million. As of September, the 5-year-old company had 84 employees, more than half in research and development. Cisco accounted for half of MMC's revenues and Hitachi for another 10%. But MMC is trying to broaden its reach by launching an array of products it claims will form the core silicon engines of LAN and WAN switches handling ATM and Fast Ethernet.

"We give the customer the basic building blocks, and they can offer their own features on top," says MMC CEO Prabhat K. Dubey. Those building blocks include the following:

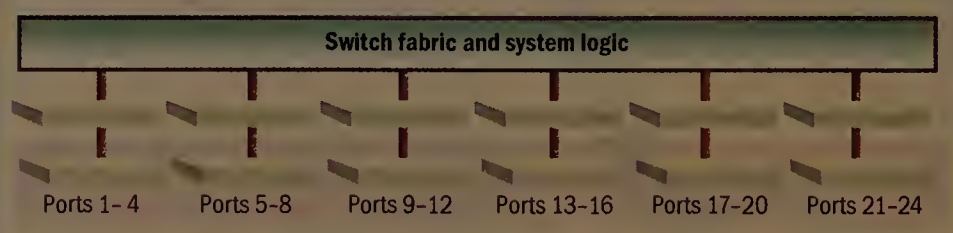
- PS1000 Fast Ethernet network processors. MMC says these chips can be used for wire-speed routing. The chips support from eight to 128 10M bit/sec Ethernet switch ports and up to 16 100M bit/sec ports, plus one or two ATM uplinks.
- ATMS2000 ATM network processors. These chips are designed for switches that support campus backbones, workgroups or WAN access. They support speeds of 2.5G to 5G bit/sec with 32 OC-3 ports or eight OC-12 ports.
- AnyFlow 5000 network processor. This chip

FEWER CHIPS MEANS GREATER SAVINGS

Today's Fast Ethernet switch



Tomorrow's Fast Ethernet switch



SOURCE: BROADCOM CORP., IRVINE, CALIF.

Fabless semi firm Broadcom is developing technology that makes it possible to perform MAC-layer and physical interface functions using far fewer chips. In this example of a 24-port Fast Ethernet switch, the resulting cost savings are at the manufacturing level; retail savings would be three to five times greater.

Quad MAC chips – one per four ports
Savings: $8 per port

Broadcom BCM5208 Quad 10/100 physical media chips – one per four ports
Savings: $6 per port

Total savings: $14 per port or $336

Fabless firms face formidable competition

Although fabless semi companies are making waves in the internetwork equipment arena, it's not as if the big traditional semiconductor companies are standing still. In fact, the conventional wisdom says the larger players should be able to win on cost because they manufacture their own chips, although they tend to be less nimble than the small design firms.

But fabless companies claim they can compete on cost as well.

"Silicon manufacturing used to be a competitive advantage," says Tim Lindenfelser, vice president of marketing at fabless semi firm Broadcom Corp. "But now we can get wafers at the same price" as semiconductor companies with their own foundries.

James Hines, a semiconductor analyst with Dataquest, Inc., in San Jose, Calif., says the average price fabless companies pay for chips dropped 40% last year on top of a 25% cut in 1996. "We've seen some pretty stunning declines," Hines says, referring to prices for top-of-the-line fabrication technology. There have also been less dramatic price cuts at older foundries. Hines says the price of fabricating chips should slip another 5% to 10% before stabilizing in 1999.

But Diane Myers, a senior analyst with In-Stat, a semiconductor market research firm in Scottsdale, Ariz., says she wouldn't count out Lucent Technologies, Inc., Texas Instruments, Inc. (TI) and other firms with foundries. TI, for instance, has shipped enough ThunderSWITCH chips to support one million Ethernet ports.

Lucent likewise recognizes the opportunity that network-specific chips represent. Lucent President and CEO Richard McGinn, when asked to say what two or three technologies are most important to the company long-term, responded: "So much value is going to silicon and software for networks that sometimes I almost think of them as similar areas. So certainly communications-based microelectronics and semiconductors is a big one for us."

Equipment vendors also worry about how reliable the small fabless semi companies will be when it comes to shipping chips. 3Com Corp., for example, always tries to find a second source for the chips or develops its own backup design in-house, said Robert Ciampa, the company's product technology manager

Fabless companies try to cover the supply base by lining up multiple foundries to churn out their chips. MMC Networks, Inc., for example, relies on Oki Semiconductor and NEC Corp. in Japan, Motorola, Inc. in the U.S. and Taiwan Semiconductor Manufacturing Co. in Taiwan, which is the foundry of choice for most of the fabless firms. MMC admits it has had supply problems in the past as foundries juggle demand from multiple customers.

Hines says there is now plenty of extra capacity at foundries around the world for independent start-ups to tap into. Indeed, the Fabless Semiconductor Association lists 140 semiconductor fabricators worldwide. Clark Westmont, an analyst with NationsBanc Montgomery Securities LLC, agrees the risk is "pretty low" that a fabless firm would be unable to find fabricator capacity somewhere.

— Todd Wallack, with additional reporting by Paul Desmond

supports ATM and Fast Ethernet switches. It features Layer 3 switching, quality of service (QoS) functions and packet/cell interworking at 20G bit/sec with a throughput of 20 million packet/sec. Samples of the chip are just starting to become available.

MMC also touts its patented ViX architecture, which features point-to-point connections and centralized shared memory. The architecture is designed to support per-flow queuing technology to buffer information during periods of congestion; direct replication engine technology for multicast signals; virtual segmentation and reassembly to convert data between frames and cells; and programmable bitstream processors to make it easier for network equipment vendors to program additional features into MMC's chips.

If all that sounds familiar, it's because those are some of the same functions switch vendors have been furiously trying to build into their equipment. Now, fabless semi companies are making them available in generic chips.

As more of these features become standard, analysts say, equipment vendors can either reduce their own development costs or shift their resources to even more advancements.

Another fabless semi firm, Integrated Telecom Technology, Inc. (IgT), in Gaithersburg, Md., claims a large network equipment vendor shut down development on its own chip after seeing IgT's segmentation and reassembly chip in action.

"They were flabbergasted," says Greg Werth, vice president of marketing, who declined to name the equipment vendor.

Pricing picture

Whether this wealth of off-the-shelf technology will translate into lower prices remains to be seen, but the potential certainly exists. For one thing, as Maker's Giudice points out, fabless semi firms can spread out development costs by selling to multiple customers. It costs his company $1 million to $2.5 million to design a chip — costs that a company such as Cisco or Bay would be forced to eat if it developed its own chip.

Tim Lindenfelser, vice president of marketing at Broadcom Corp., a 7-year-old fabless semi firm in Irvine, Calif., says lately his company has been focusing on Fast Ethernet chips. In a 12-port Fast Ethernet hub configuration, for instance, the firm was able to combine functions normally handled by 25 chips onto four. Specifically, Broadcom modified the physical interface chips so that each can handle more ports.

For network equipment vendors, that reduces the price from $10 per port to about $5. And the company can knock another $1 per port off the cost by consolidating the repeater function onto the remaining physical layer chips. Multiply that $6 per port savings by 12 ports and you get a reduction of $72 per hub at the manufacturer level.

Go online for links to the Fabless Semiconductor Association, as well as links to Web sites operated by the fabless semi firms mentioned in this story.

www.nwfusion.com FIND IT ON FUSION 6031

Lindenfelser estimates each $1 saved in parts translates to a $5 reduction in the final cost of a product, although Dataquest, Inc. analyst Greg Sheppard says $3 to $4 is probably more accurate. Depending on which number you use, that translates into a $216 to $360 reduction off last year's $1,320 retail price for a 12-port Fast Ethernet hub. "It's a huge cost difference," Lindenfelser says. Broadcom's Fast Ethernet chips are already available and going into 3Com and Bay products.

Going forward, Broadcom figures it can squeeze even more dramatic savings out of switches. In addition to the $6 savings per port ($18 to $30 retail) on the physical chip level, Broadcom predicts it will be able to consolidate media access control functions by the end of this year, reducing the manufacturing cost by another $8 ($24 to $40 retail). That $14 savings at the manufacturing level translates to a total retail cost reduction between $42 and $70 per port. That would be a 15% to 25% reduction in the overall cost of a Fast Ethernet switch, based on the 1997 rate of $275 per port, Lindenfelser says. "The analysts don't quite understand the price reductions ahead," he notes.

Sheppard notes chip prices have already been plummeting. Fast Ethernet chip prices are down 35% to 40% from one year ago, in part because of new chip makers. He projects prices to decline another 20% this year. "NICs and switches have been dramatically impacted by chip price moves," he says.

Justin Smith, an analyst with International Data Corp., also sees fabless companies pushing down prices at the low end, for products such as Ethernet and Fast Ethernet network interface cards and hubs. "Everything from the client up to the wiring closet is definitely becoming a game of who can produce the equipment least expensively," Smith says. "The chip companies bring a lot to bear on that equation."

Smith expects Ethernet card prices, for instance, to fall by more than one-third by the year 2001. Even today, he says, unmanaged 10M bit/sec Ethernet hubs can be purchased for less than $10 per port. In many cases, they are essentially given away in deals for other equipment.

At the higher end of the market, start-up Orologic, Inc. also is trying to consolidate features onto fewer chips. Raif Onvural, cofounder and vice president of engineering, predicts network equipment vendors will be able to build a 16-port OC-3 ATM switch for less than $85 per port. He estimates the retail price would be $170, though the price would actually range from $255 to $340 per port using Sheppard's multiple. In any case, either estimate handily beats the $400 to $500 market price today, Onvural says. And he says his box will contain more memory and features than any campus backbone switch currently on the market.

Onvural estimates network equipment vendors could shave 20% to 30% off prices by using off-the-shelf chips with QoS and other features instead of developing them on their own. That's based on the assumption that the development of the chip would require 15 engineers or more and

A SAMPLING OF FABLESS SEMI PLAYERS

Name	Comcore Semiconductor, Inc.
Based	Calabasas, Calif.
Founded	1997
1997 Revenue	Minimal
CEO	John Guidon
Product Focus	Digital physical layer Ethernet chips
Comment	Traces its roots to a failed computer game company.

Name	Integrated Telecom Technology, Inc.
Based	Gaithersburg, Md.
Founded	1991
1997 Revenue	$12 million to $13 million
CEO	Chuck Morantz
Product Focus	ATM and LAN switching
Comment	Its ATM segment and reassembly chips are used by Northern Telecom, Newbridge and other telecom equipment makers. Also makes low-end uniform interface devices used by Cisco and others.

Name	Galileo Technology, Ltd.
Based	Karmiel, Israel and San Jose, Calif.
Founded	1993
1997 Revenue	$36.5 million
CEO	Avigdor Willenz
Product Focus	System controllers, switched Ethernet LAN controllers and remote-access WAN controllers
Comment	Went public last summer. Earned $10.3 million in 1997, a healthy profit margin.

Name	Orologic, Inc.
Based	Research Triangle Park, N.C .
Founded	1997
1997 Revenue	None
CEO	Ralf Onvural
Product Focus	Application-specific integrated circuits
Comment	Plans to incorporate high-level QoS and other features into chips.

cost $2.5 million to $3 million per year, and that companies like Orologic could spread the development costs over several customers.

Luke Szymczak, a network industry analyst at Prudential Securities in New York, says the rise of network chip makers is a natural evolution. It doesn't make sense, he says, for the Bays and Ciscos to continue to spend money developing components internally if they can buy them on the open market. Instead, he says, equipment vendors need to focus on pioneering advanced features to stay ahead of the competition.

Building better boxes

To varying degrees, equipment vendors have been taking Szymczak's advice.

Cisco, for instance, says it wants to focus on software and other strengths and welcomes the chance to buy more generic network chips. "It's a good thing if it allows us to get products to our customers faster, cheaper and with better performance," says Marc Beckman, senior manager of semiconductor commodity management at Cisco.

Bay and 3Com, however, while acknowledging that they do use some silicon from fabless semi companies, profess that they plan to continue designing most chips on their own.

"I think there are some features that we are looking to incorporate into our products and, in most cases, we don't see those features being available as off-the-shelf products," Bay's Lapointe says, noting Maker is one of the exceptions.

In some cases, however, equipment vendors like the fabless semi chips so much they buy the company. Cisco, for instance, last June paid $89 million for Skystone Systems Corp., a fabless semi firm in Ottawa that specializes in integrating telecommunications functions for fiber-optic networks. And, in December 1996, Bay shelled out $99 million for NetICs, Inc., a fabless company that designed an innovative Fast Ethernet chip.

For its part, 3Com says it will typically look outside only for the most primitive network components. It likes to embed its own code in the switching fabric and other advanced chips.

"The problem comes as you go up the stack," says Robert Ciampa, 3Com's product technology manager. "These [fabless semi] manufacturers want to give you a total turnkey solution and we have specific software" that conflicts with that.

Ciampa concedes 3Com could load its own software onto a programmable chip, but says that is usually more clumsy than designing the chip internally. He also says equipment vendors are already working on consolidating functions onto fewer chips and taking other steps to slash costs.

The long term

Dzubeck thinks the real effect fabless semi companies will have on the network industry won't be felt until the year 2000. "It's going to take a little while to develop the market," he says, noting that companies such as Bay and 3Com aren't likely to do anything to accelerate the process. "How fast do you want to drive down your prices?" he asks. Eventually, though, he envisions LAN chips selling for "less than the cost of the power supply." And he sees fabless companies tossing in extra features, like Layer 3 switching, practically for free.

Wall Street is already betting several fabless semi firms are going to cash in. "It's not conjecture," says Clark Westmont, an analyst with NationsBanc Montgomery Securities LLC. The market has already taken off, he says, noting companies such as PMC-Sierra, Inc., which in the last quarter of 1997 saw 91% revenue growth in its network business, compared with the same period in 1996. "It's already happened," Westmont says.

Just how much of an impact the companies will ultimately have is hard to gauge.

3Com's Ciampa said he could see start-up switch companies, most likely in Asia, building vanilla boxes to undercut the established players. But he maintains that 3Com and others are cutting prices so much that an upstart would have a hard time making a dent in the market. Plus, companies like 3Com have other advantages, including an established sales and service force, not to mention advanced software functions.

Dzubeck, on the other hand, thinks the effect will be more dramatic. He foresees a world of dirt-cheap boxes that support functions like Layer 3 switching.

Given the pace of change, it may not be all that long before Dzubeck's vision becomes reality.

Maker, for example, has been in business for just over three years, yet Giudice says he has lined up deals with four of the largest data communications equipment companies, meaning vendors such as Cisco, and several large telecommunications equipment makers, including Northern Telecom, Inc. And Maker has grown from two people working out of their homes — Giudice and cofounder Paul Bergantino — to a cubbyhole in Waltham, Mass., to the current 43-person office in Framingham.

But Giudice and other fabless pioneers don't like to talk about the present. They prefer to dwell on what the industry will be like tomorrow, when you'll be able to buy less expensive equipment with better performance and features. It will be a world created at least in part by fabless semi companies that you now have heard of, companies like Maker Communications.

CHIP PRICE NOSE DIVE

	1996	1997	1998
Ethernet (10M bit/sec)	$7.2	$6.5	$6.1
Fast Ethernet (100M, 10M/100M bit/sec)	$13.9	$11.1	$9.8
Token Ring	$21.2	$20.1	$19.1
FDDI	$36.0	$30.6	$26.0
Gigabit Ethernet	–	$50.0	$35.0

While prices for various types of LAN-related chips have already fallen, analysts predict more dramatic decreases as network-related chips from fabless semi firms hit the market. The numbers above reflect the average selling price worldwide for application-specific integrated circuit (ASIC) and application-specific standard product (ASSP) chips.

SOURCE: DATAQUEST, INC. SAN JOSE, CALIF.

Wallack is a business reporter for the Boston Herald *newspaper, where he covers technology firms. He can be reached at wallackt@dma.org.*

REVIEW

SEAGATE'S MANAGE EXEC OFFERS A FLEXIBLE, POWERFUL EVENT MANAGEMENT SYSTEM.

Pinning down network problems

Score Card

Manage Exec	
Administration (30%)	7 x .30 = 2.10
Reporting (25%)	7 x .25 = 1.75
Stability (25%)	9 x .25 = 2.25
Installation and configuration (10%)	8 x .10 = 0.80
Documentation (10%)	3 x .10 = 0.30
Total score	7.20

Individual category scores are based on a scale of 1–10. **Percentages** are the weight given each category in determining the **total score.**

By Mark Gibbs

Some witty person once remarked that managing a network is a lot like trying to nail Jello to a wall. The problem is that any given operating system has hundreds of variables and identifying the ones that matter in your environment is a slippery proposition.

Seagate Software's Manage Exec addresses the problem of monitoring servers running Microsoft Corp.'s Windows NT 3.51 or later or Novell Inc.'s NetWare 3.11 or later. Seagate's latest version, 5.0, was just released. Tracking more than 1,000 attributes of NT systems and more than 250 attributes on NetWare servers, Manage Exec provides an instantaneous picture of a server's health, as well as historical and trend data.

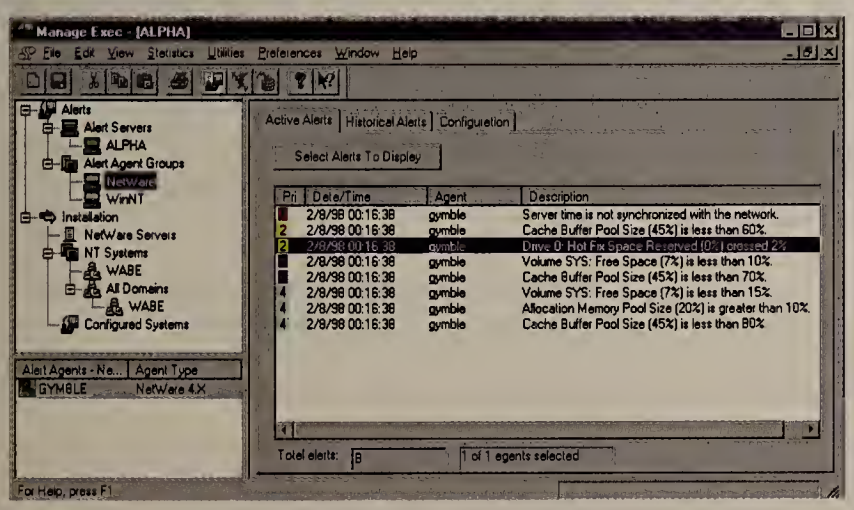


Figure 1: *The Windows-based console lets you install and configure remote server agents and receive, report on and clear alerts.*

This is a terrific utility, particularly for environments with a mixed population of NetWare and Windows NT. Manage Exec can tell you about a huge range of server conditions and provides an effective alerting and tracking mechanism for critical events along with invaluable trending data.

Manage Exec supports forwarding of SNMP traps to Hewlett-Packard Co.'s OpenView, Tivoli Systems, Inc.'s TME, Computer Associates International, Inc.'s UniCenter TNG, and Seagate's own Software NerveCenter. Manage Exec also plugs in to the Microsoft Management Console. And following the inescapable trend, Manage Exec offers a Web console and a Windows-based console, although they have different functions.

Our only complaints about Manage Exec concern presentation and security. Presentation is the less crucial of the two issues: The Web and Windows Manage Exec interfaces could do with some reorganization to make them easier to use. There also is help text in the browser presentation that is linked to reports to provide explanations of definitions, but the explanations are not particularly helpful.

The second issue, security, is a real problem. While the Windows console has a basic level of security, allowing you to define names, passwords and associated levels of read or read/write access to alert data, the Web console doesn't have any kind of access control. That means all of the intimate details of your servers could be browsed by anyone who can access your Web server. Unfortunately, Seagate doesn't bother to discuss this issue anywhere in its documentation, and its software doesn't warn you that a potentially dangerous security concern exists.

There is, however, a fix. As long as the Seagate management console software is installed on an NT File System volume, you can configure user access permissions to restrict who can access the subdirectories that are mapped into the Web server and thereby gain full access control.

Architecture

In addition to the consoles, which are the user interfaces for the system, Manage Exec consists of two other component groups: the executives, which receive alerts and decide how they should be handled, and the agents, which monitor server information and send out the alerts.

Manage Exec deals with events, which simply are changes in system performance variables. Depending on how you configure event handling in Manage Exec, events may be assigned to one of five levels of severity. Events can be defined for when counters go above or below certain values and when they change by a set amount.

Seagate uses two kinds of executives: a Web executive that provides the Web interface for browsers (essentially a customized Web server front-ending the system), and an alert executive that offers up views of alert data and configures how alerts are handled. Supporting both is an alert server that receives alert data from the agents. The alert executive and alert server run as system services under Windows NT.

There also are two types of agents: monitoring agents that collect real-time server data and alerting agents that periodically scan for server conditions that exceed preset thresholds. Agents are implemented as services under Windows NT and as NetWare Loadable Modules under NetWare.

Manage Exec's agents have little impact on the servers they run on — we found processor overhead of less than 1%. The agents are likewise designed to minimize network traffic by exchanging statistical information during scheduled bulk transfers, rather than being constantly polled by the executive.

Manage Exec agents track counters within the monitored operating systems. These counters include network and disk input/output and processor utilization. Events are sent when counter values change or reach predefined minimum or maximum values.

For a link to another server performance monitoring tool, turn to Network World Fusion 6011

www.nwfusion.com

Setting up events is easy. In the Windows console you simply select the event category and the counter you want to monitor. The console allows you to create events whenever changes in the counter occur, as well as when thresholds are reached. For some counters you can create events based on a percentage change rather than an actual value.

You can set as many as three thresholds for each counter and make each threshold generate an event with a separate priority. You also can specify reset values to clear a threshold event when some previous level is reached. For example, you might want to raise an event when server utilization exceeds 80% and clear the event when utilization drops below 50%.

Additionally, you can specify "persistence," which prevents alerts from being generated unless a counter has been evaluated as exceeding a threshold a given number of times.

In response to events at any or all priorities, the Windows console can be configured to make sounds, flash its icon in the Windows task bar, or bring its Window to the foreground if it has been minimized. Seagate also provides an add-on utility to send alerts via pagers. But the utility, included on the disk, isn't documented in the distribution kit.

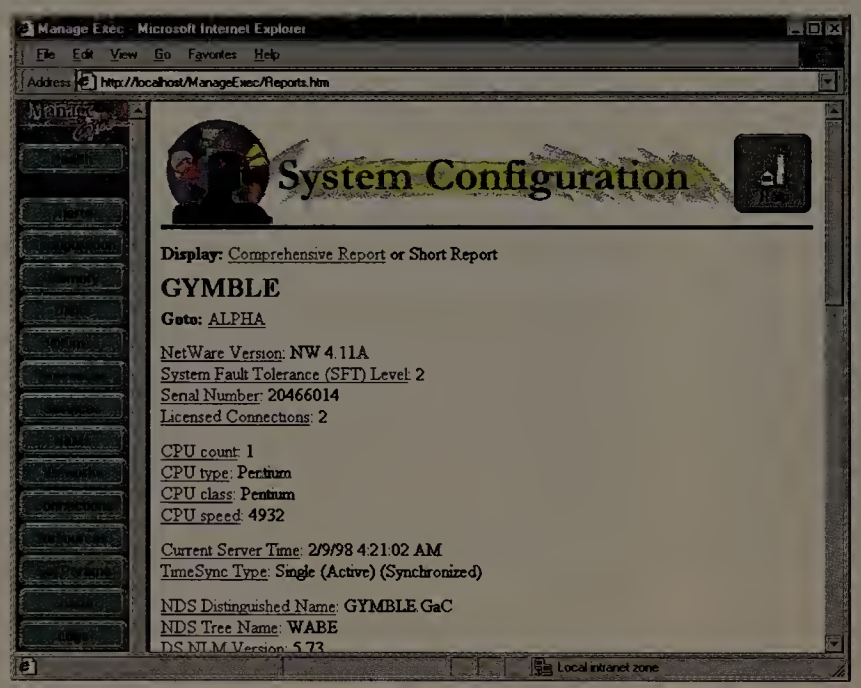


Figure 2: *The browser-based console can display a huge range of information, in addition to reporting alerts.*

A major concern for the less-experienced administrator is which counters to monitor and why. Manage Exec supplies some help in this area but really doesn't go deep enough into the background detail. For example, the NetWare help on counter values is really just a rewrite of Novell's own commentary, which itself isn't very helpful in understanding the implications of these values.

Through the Windows console you can examine current alerts and clear outstanding ones, as well as browse historical events. Obviously if you have a large number of monitored servers, you can generate a considerable number of events, and the Windows console provides you with filtering to select the events you're interested in.

The Web interface is not a Webified version of the Windows console but rather a general information interface that shows the alerts and system configuration details. It provides some basic graphing services, allowing you to plot a number of counters by their maximum, minimum and average values.

We found the Web interface to be poorly organized. Some of the available options apply to all monitored servers and others apply just to NetWare or NT servers.

Many of the reports contain hyperlinks to other pages. But when you follow the links, you often find that they go only to a definition that is not particularly helpful. The Short System Configuration report is a good example of this problem. Seagate needs to expand this help data because it would be a tremendous aid to anyone administering a server to have comprehensive help on hand when notified of an event or when examining a server's setup.

Installation and configuration

Seagate Manage Exec is extremely easy to install and configure. The Windows console and the executive require Windows NT 4.0 Workstation or Server with Service Pack 3 on at least a 75-MHz Pentium with 64M bytes of RAM and 35M bytes of disk storage.

If you plan to manage NetWare servers, you'll need Novell's IntranetWare Client 32. Seagate includes this on the distribution media and provides automatic sensing and installation of the software if required.

Manage Exec supports four Web servers: Microsoft's Internet Information Server, Microsoft's Peer Web Services, Netscape Communications Corp.'s FastTrack, and O'Reilly & Associates' Website. If you don't have a Web server already installed, Manage Exec lets you install Peer Web Services for NT Workstation.

Once the software has been installed, the installation procedure offers to run the Agent Installation Wizard. This process installs and configures the alert server and agents on the local NT system.

The next step is to install the remote monitoring and alert agents on the remote NT and NetWare systems. This is done through the Manage Exec Windows console. IP, IPX or both can be used for sending alerts.

You also can install stand-alone Windows consoles on other NT machines. These machines can be used to browse and configure alerts but not to perform agent installation or configuration.

Seagate claims a single alert server is capable of handling 10,000 agents. In practice, you probably would configure multiple consoles to each handle a subgroup of servers to reduce network traffic; while agents don't generate much traffic individually, 10,000 of anything makes a significant load. You can configure how often counters are evaluated (the default is every 10 seconds) and how long statistics are retained (seven days by default).

Configuring alert servers and NT agents to generate SNMP traps also is easy. NetWare agents, however, don't generate SNMP traps — that's something Seagate leaves to Novell's own network management tools.

You also can select whether clearing an alert generates a trap and whether a heartbeat trap (effectively an "I'm alive" broadcast) should be sent and how often. Finally, up to eight destination addresses may be specified for SNMP traps, and you can set a custom community string if needed.

For NetWare servers only, there's a special expert agent that operates in tandem with the regular alert agent. The expert gathers performance data from the alert agent and determines what alert threshold settings are more appropriate for the specific server environment.

Seagate doesn't explain exactly how this is achieved other than to mention rule-based reasoning. The expert agent can set these values automatically or on command. While a complete explanation of how this advanced feature operates would be desirable, we found the automatically revised thresholds to be reasonable.

Seagate Manage Exec has a few rough edges and a couple of deficiencies, but otherwise it is solid and a good value. It may not help you to nail all your problems, but it should help keep your users from trying to nail you to the wall.

Gibbs is an author, consultant, and contributing editor to Network World, *and editorial advisor to* Intranet Magazine. *He can be contacted at nwf@gibbs.com or at (800) 622-1108, Ext. 7504.*

Net Results

Seagate Manage Exec Version 5.0
Seagate Software
(800) 327-2232, (407) 531-7501
www.seagatesoftware.com/manageexec
Price: From $895 for 1-server license to $49,495 for 100-server license

PROS
- ▲ Simple installation and configuration
- ▲ Supports both Windows NT and NetWare servers
- ▲ Flexible alert definition and reporting

CONS
- ▼ Web console lacks built-in security
- ▼ Poor Web interface organization
- ▼ Weak help links in the Web reports

How We Did It

We installed Seagate Manage Exec Version 5.0 on a Micron Electronics, Inc., Vetix Lxi with a 266-MHz Pentium Pro CPU and 128M bytes of RAM running Microsoft Windows NT 4.0 and Microsoft Internet Information Server 3.0. We also tried Manage Exec on a NetWare 4.11A server with NetWare Web Server Version 2.51R1 and another Microsoft Windows NT 4.0 server with Microsoft Internet Information Server 3.0. Both of these were housed in a ChatCom, Inc. Office Series 210 with 100-MHz Pentium boards with 32M bytes RAM.

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Management Strategies

Know when to bail out

How to recognize the warning signs that a project will fail before it's too late to pull the plug.

By Lauren Gibbons Paul

Gord Lamb has a gut feeling that a project his company is working on is heading down the tubes. Call it IT manager's intuition.

The systems manager is supposed to support Union Gas, Ltd.'s first client/server application — a customer information system based on distributed Windows NT servers and an Oracle back-end database. If, that is, the application ever gets rolled out. The Chatham, Ontario-based utility is about eight months into the project, and Lamb sees red flags everywhere.

"I get concerned when a project doesn't have any clear owner or sponsor," Lamb says. That's certainly the case with this application, which has tripartite management sponsorship from executives at Union Gas, IT outsourcer Information Systems Management Corp. (a business unit of IBM) and Union Gas' parent company, Westcoast Energy, Inc. "We've got a three-ring circus going here," he says.

The project also suffers from lack of accountability and communication and the classic critical failure factor — missed deadlines. "We're not hitting our milestones. We're three to four months behind, and that's after we pushed the deadlines out three months to start with," Lamb says. The budget is history at this point, too, he says, but even that is not such a big deal.

Time is the real problem. The floundering application has to be in production by the end of next year because it is replacing mainframe-based systems that aren't Year 2000-compliant. "High-level management needs to step in. This is a cash register application that we need," Lamb says. About 800 Union Gas employees will be using the customer information system to support 1.2 million customers across Canada.

Failures are frequent

If the project fails, at least Lamb is in good company. A recent survey of 500 IT directors by Sequent Computer Systems, Inc. found that 76% of them had experienced a major project failure at some point in their careers (see graphic, page 47). Indeed, project failures seem to be a cost of being in the IT business.

The rate of project failures is accelerating, says Gopal Kapur, president of the Center for Project Management, a consulting firm in San Ramon, Calif. "Project complexity is increasing because there are many more unknowns and technology changes are faster and more severe than ever before," Kapur says. "Since the unknowns are higher, the risks are higher." That translates into more project failures and stress for those who work in the field.

Sequent's survey revealed that a majority of projects fail simply because of a lack of project management, says Steve Wanless, senior marketing manager for Sequent, in Beaverton, Ore. "Managers don't understand the scope of the project, or they don't manage it well," he says. A full 66% of the respondents blamed project failure on changing user requirements, a sign that the deadly "scope creep" has occurred.

Increased project spending late in the game should raise another red flag. "Managers get the attitude they're going to roll it out come hell or high water. People are so committed at that point that throwing more money isn't too much of a problem," Wanless says. But this attitude can be fatal — a sign that ever-increasing amounts of money will be spent as the doomed project limps along.

The key questions to ask the sponsor prior to launch are "Under what conditions should the project be shut down?" and "What are the metrics of project success?" Kapur says. The first question is tough to ask because you're acknowledging that the project could fail. But if you never know the answer, it's difficult to know when it's time to pull the plug. By human nature, people hate to admit defeat and kiss goodbye the effort they've put into a project.

Jim Kinney, chief information officer at Kraft Foods, Inc., in Northville, Ill., admits that project managers at his company don't ask that question before launching projects. "That would be a pessimistic approach," Kinney says.

Kraft does have an ironclad process for weeding out viable projects from half-baked ideas, another best practice that Kapur recommends. Kraft developed its Systems Development Process (SDP) project management methodology in-house with the aid of RWD Technologies, Inc., a consulting firm in Columbia, Md.

The cornerstone of SDP is "3X3"alignment, which means Kraft doesn't undertake a project until there is agreement among the project manager, the business manager from the unit that will benefit from the project and a senior-level executive sponsor.

"We only attack problems whose time has come," Kinney says. "Since we have a clear alignment of objectives for starters, it helps curb scope changes."

However, even Kraft must pull the plug occasionally. When Kinney calls it quits on a project, this usually occurs right after the pilot stage, when it's clear the initiative didn't meet users' needs.

Users most often register their displeasure through specific feedback during the rollout or outright resistance to using the new system. If users don't agree with the sponsor's vision of the project goals, Kinney bites the bullet and shuts the project down instead of wasting excessive amounts of time and money trying to deploy it to a wider audience.

Still, Kraft's IS department is getting better at avoiding project failures and is often able to relaunch a project that wasn't initially well-received by pilot users. "Pilots sometimes reveal a fundamental problem. I

don't think that's necessarily a failure," he says.

Adhering to solid project management principles has given Kraft recurring results, Kinney says. However, at this point it may take more than good project management to save the project at Union Gas.

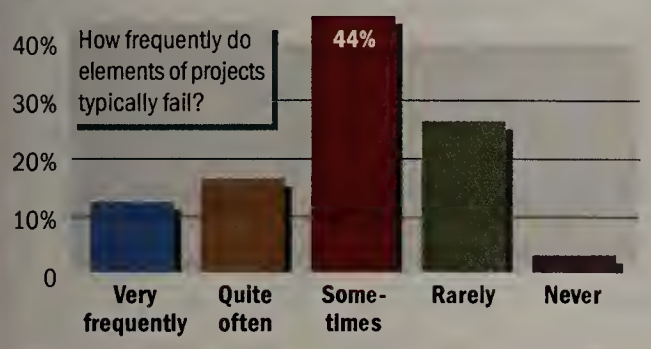
For his part, Lamb is already numb to the possibility of failure. "You sort of check out," he says. "You make yourself heard and you're ignored, so you say, 'Forget it.' "

In fact, Lamb was so fed up that he resigned from Union Gas; his last day is this week. But there's no getting away from the faltering application. Lamb took a job with the project contractor and hopes he can turn help turn things around.

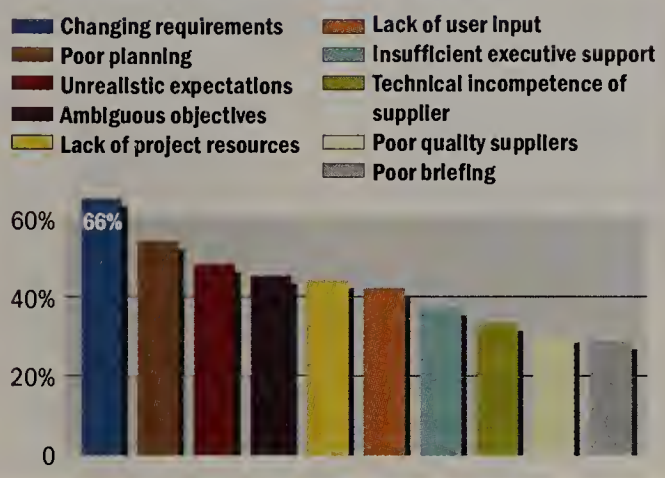
Paul is a freelance writer in Belmont, Mass. She can be reached at laurenpaul@sprintmail.com.

IS YOUR PROJECT MANAGEMENT SUCCESSFUL?

Seventy-six percent of IT managers have been involved with at least one major project failure, according to a survey of 500 IT directors by Sequent Computer Systems.



TOP REASONS PROJECTS FAIL OR GO WRONG



NON-NEGOTIABLES FOR A SUCCESSFUL PROJECT

- Succinct project definition
- In-depth stakeholder assessment
- Comprehensive complexity assessment
- Realistic risk assessment
- Well-formulated charter
- Comprehensive task plan
- Well-designed project organization
- Realistic and accurate estimates
- Viable schedules
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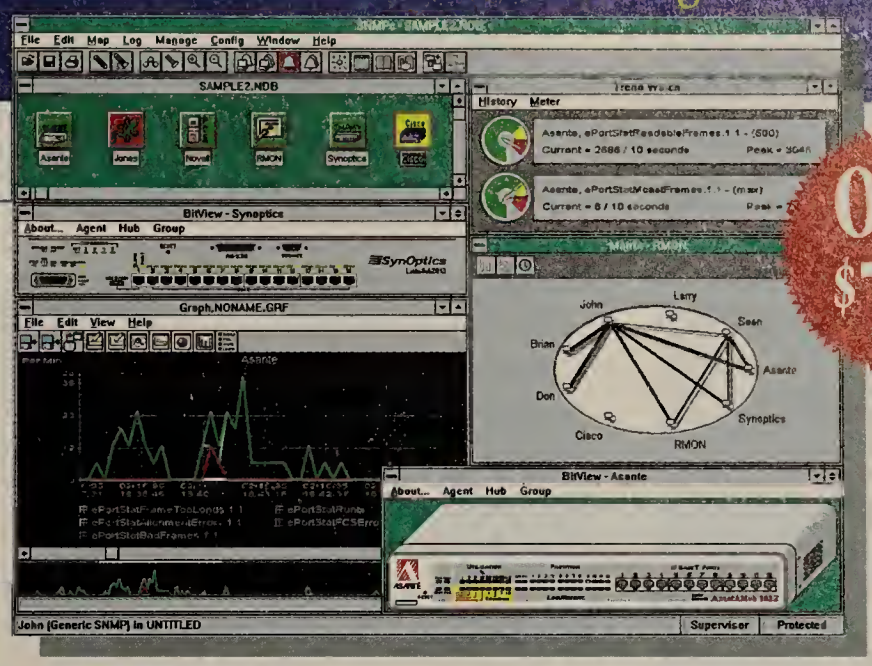

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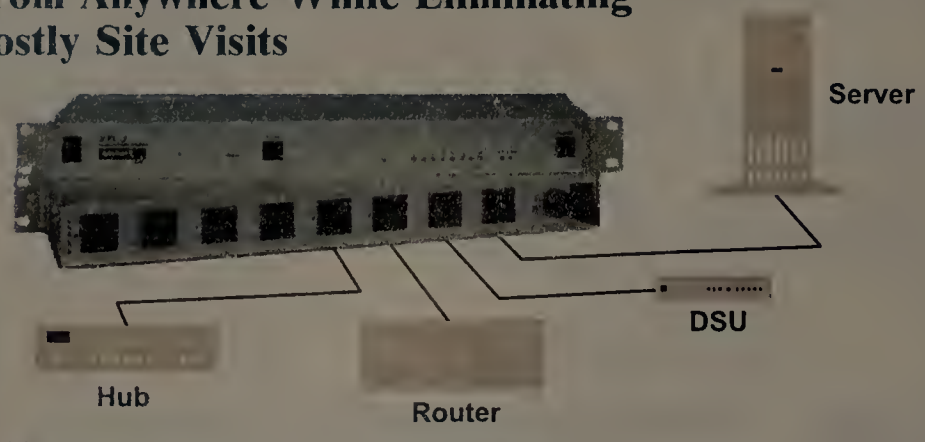

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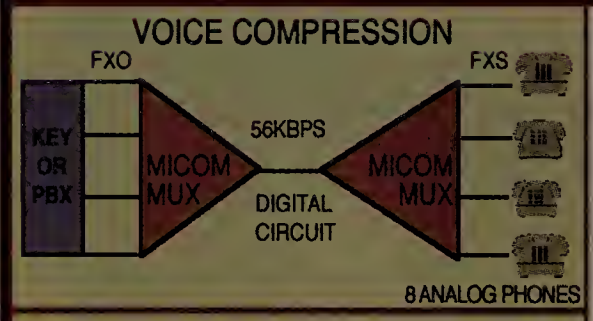

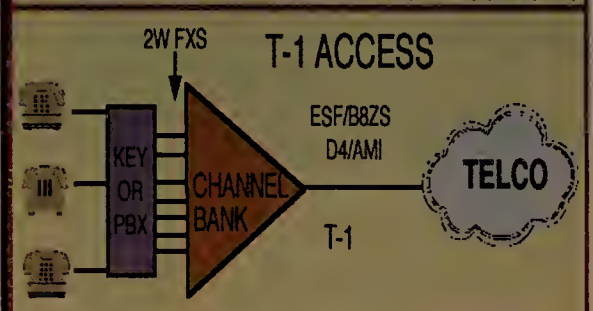

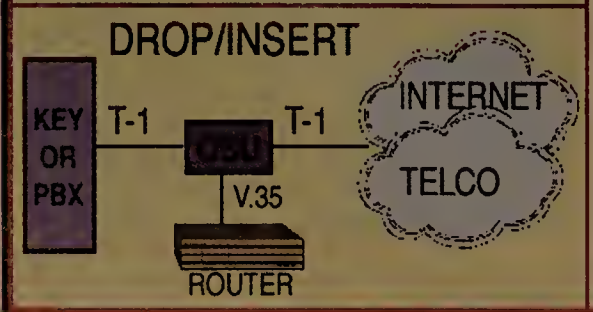

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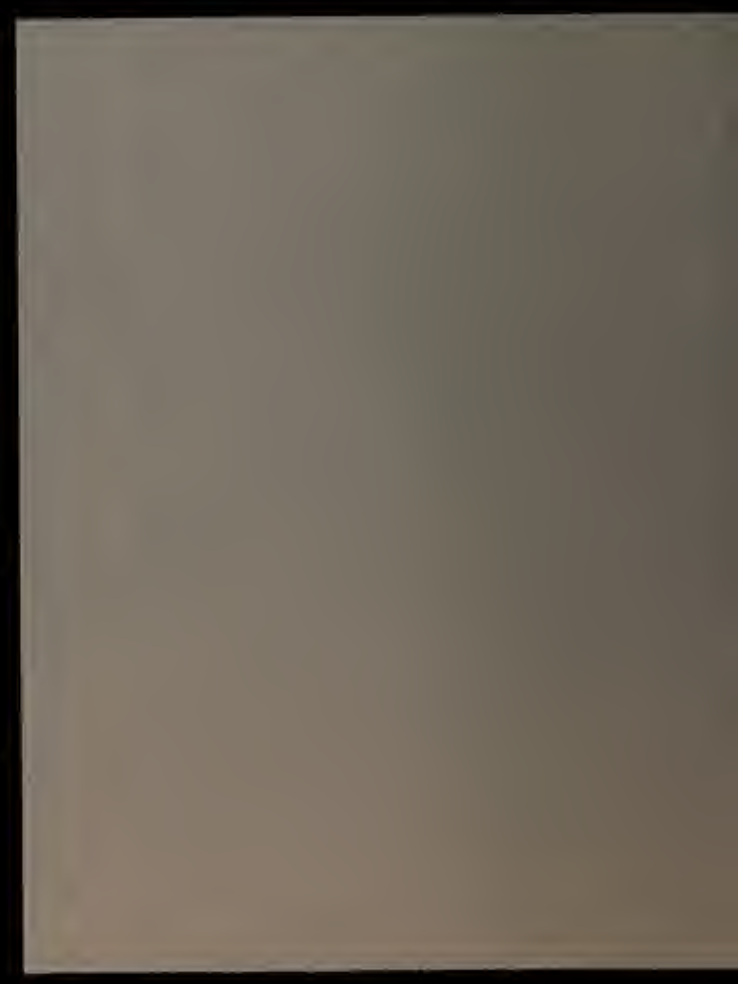

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DIRECTORY OF SERVICES

Spam

Continued from page 1

Expected to ship later this month, Mail Filter will be marketed to corporate users and Internet service providers.

Using a variety of filtering techniques, the device examines e-mail headers looking for known spammers and telltale signs of forged addresses.

Mail Filter can be configured from a Web browser to either tag suspected spam and queue it for eyeball analysis, or to reject the message outright, in which case the sender receives notification.

Those familiar with BSDI's plan last week offered mixed reactions. "On paper, [the Mail Filter] looks great," said Scott Chasin, chief technology officer at USA.net, a Web-based e-mail provider with 3.1 million subscribers, based here. Chasin said he is anxious to install a beta version of the device.

Mail Filter's cross-platform compatibility, ease of installation and hands-off administration should appeal to users, provided the appliance performs as advertised, Chasin added.

However, Paul Hoffman, director of the Internet Mail Consortium, has long been critical of spam remedies that rely on filtering mail at the server. Nothing about his understanding of the BSDI device has changed that view.

"The biggest problem with server-side filtering is that it can easily lose business messages, depending on how the filters act," Hoffman said.

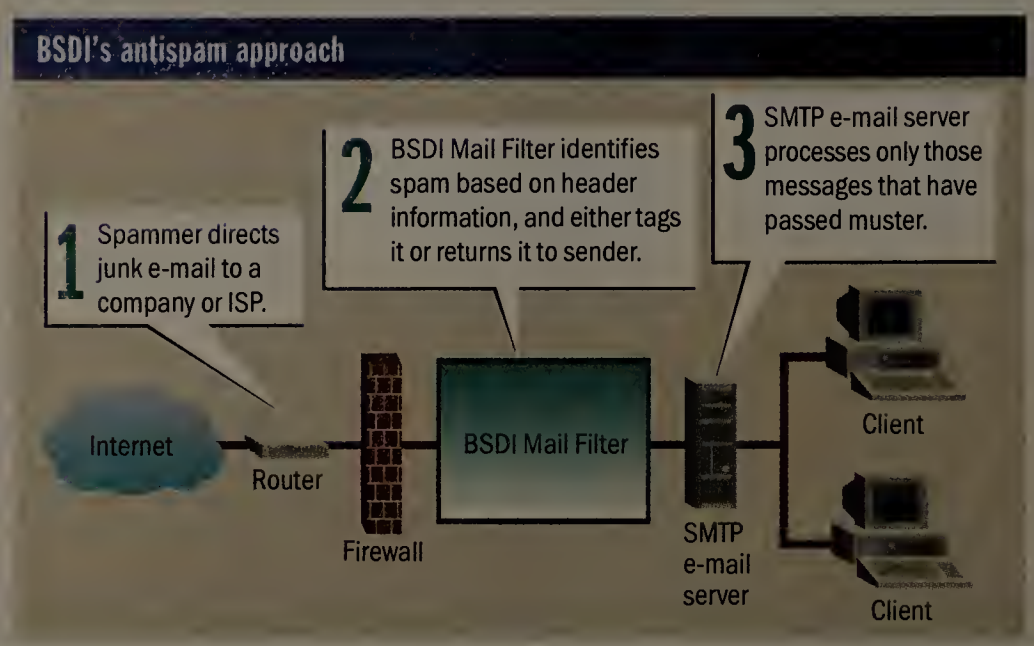
BSDI CEO Kolstad countered that concerns about filters generating "false positives" are overblown and that his company's new product is equipped with safeguards.

"Of the thousands and thousands of mail messages we have checked [at BSDI] in the past 40 days, we got one false positive, and that person was notified that their mail was not delivered," Kolstad said.

He anticipates that the subscription service will be particularly attractive to network administrators who don't have the time to keep abreast of the latest antispam measures.

"As soon as we know there is a spam site out there, your box will be updated within 10 minutes," Kolstad said.

The BSDI Mail Filter will come in two forms — one that the company says will handle 25,000 to 50,000 messages per hour, and a second that can handle in excess of 100,000 messages per hour. The devices are expected to cost about $6,000 and $10,000, respectively. ■



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Novell

Continued from page 1

In a conference call to Wall Street analysts, Schmidt said the company is right where he expected it would be six months into his 18-to-24-month recovery plan. "Novell certainly is relevant again," he said.

Schmidt said he expects the company's ramped-up delivery schedule for new versions of NetWare, BorderManager, ManageWise and GroupWise to fuel continued success.

Novell attributed its first-quarter profit to harsh cost cutting moves that included laying off 25% of its work force and significant channel inventory reductions. These measures held operating expenses for the quarter to $192 million, $45 million lower than expenses in the same quarter last year.

This is how most corporate restructurings start, said Scott Reamer, an analyst with Boston-based Cowen and Co.

"You need to control the infrastructure, i.e., the costs," he said. "Stabilize them there and then move on to focus on products and revenue."

Users who have invested heavily in Novell technology were heartened by the company's financial performance.

"Nobody wants to see the company who supplies 90% of your network software waffle. So this is finally encouraging news," said Bill Kannberg, technology manager for the Hillsboro County, Fla., government, which has a 2,000-seat NetWare 4.X network.

Despite the positive profit picture, financial trackers were alarmed by Novell's 33% drop in revenue from last year's first quarter to this year's. At this rate, Novell will barely be able to maintain its $1 billion annual revenue.

Mary McAffrey, an analyst at Bankers Trust/Alex Brown, in New York, expected better revenue numbers given that Novell shipped a number of new products last quarter. NDS for NT, BorderManager FastCache and the Netscape Servers for NetWare all hit the street in the past three months.

Giga Information Group, a technology consulting firm in Santa Clara, Calif., estimated that these products will only pull down $50 million each this year.

"They are going to have to bank on something much bigger if they are going to get even close to the revenue numbers they've enjoyed in the past," said Todd Chipman, an areas director with Giga Information Group.

Stewart Nelson, vice president of Novell's products group, said the company is banking on NetWare 5 — the firm's top engineering priority this year — to help boost revenue.

NetWare 5 is the next release of Novell's flagship product that Schmidt said will open up the network operating system to Internet standards. This upgrade — which will enter its third beta cycle at the firm's annual Brainshare user conference later this month — swaps out Novell's proprietary IPX protocol in favor of standard TCP/IP. The product also will support server-side Java applications.

The company is on track to deliver NetWare 5 by midyear, Nelson said. ■

GroupWise set for a feature boost

GroupWise customers will get a peek at the beefed-up document management and World Wide Web publishing features planned for the product's next upgrade when they gather later this month at Brainshare, Novell Inc.'s annual user conference.

According to customers who have early beta code labeled GroupWise 5.5, the release will also include new ways to print calendars and support for Secure Multi-purpose Internet Mail Extensions.

Code-named Surge, the 5.5 release will be important for GroupWise as it struggles to maintain footing in a marketplace that has been dominated by Lotus Development Corp.'s Notes/Domino combination and Microsoft Corp.'s Exchange Server.

Novell officials last week declined to confirm or deny any details of the release, including the reported version number. "Novell is advancing its direction with the next version of GroupWise by enhancing ways users receive, store and publish information securely," the company said in a statement.

One customer who has tested the early GroupWise code said its document management capabilities were better organized and easier to use. "They have really done some neat things with calendars and printing options," and added the ability to have user-defined shared address books, he said.

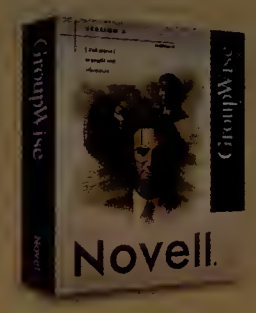
Novell's WebPublisher, which allows end users to publish GroupWise documents directly to the Web, has been a separate add-on since its debut last year. According to beta testers, however, WebPublisher has been made an integrated part of the upcoming release.

While GroupWise has struggled to attract new customers and been all but written off by some industry analysts, many longtime users remain loyal to the product.

"It continues to excel simply on the basis of its out-of-the-box usefulness," said Andrew Percy, president of Puzzle Solutions, Inc., a network integrator. "We're not concerned about the long-term viability of GroupWise."

At the Brainshare conference, Novell is also expected to release its third beta for NetWare 5, demonstrate its 16-node clustering software code-named Orion and disclose details about an upgraded version of its BorderManager Internet access management software.

— Paul McNamara



The next version *of GroupWise will have enhanced document management capabilities.*

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Cabletron

Continued from page 1

management platform, as well as remote access technology companies that can bolster Cabletron's core switches.

Reed last week outlined a series of efforts during a wide-ranging discussion with *Network World*. These efforts include:

- Establishing a West Coast presence alongside Cabletron's bigger rivals
- Creating an electronic commerce site to rival that of Cisco Systems, Inc.
- Knocking down barriers between Cabletron — known for its strong direct sales organization — and resellers

In addition, Reed is restructuring Cabletron into three businesses: the Enterprise Business Unit, the Service Provider Business Unit and the Software Business Unit.

Cabletron's *Reed*

The Enterprise Business Unit encompasses the products at the core of the old Cabletron — switches and hubs — as well as the people and technology obtained via the Digital Network Products Business acquisition. The division is being run by John d'Auguste, former vice president of operations at Gateway 2000.

The Service Provider Business Unit, based at Digital's Acton, Mass., facility, will focus on developing products and supporting customers in the Internet service provider and telecommunications carrier markets. Reed has promoted Giulio Gianturco to president of the new division. Gianturco was vice president for sales and marketing at Digital's Network Products Business. He was also a key player in establishing Digital's channel partnerships.

Cabletron has not yet named a president for its Software Business Unit, which will focus on developing and selling Spectrum. Although Reed expects to rely on all of his business unit presidents, he will lean particularly hard on Gianturco when it comes to improving Cabletron's channel relations.

"I've met with senior executives from all the major channels in the last two to three months," said Reed, who learned that in the past the channels, "haven't felt very good about Cabletron because we haven't supported them."

Cabletron will still keep the top 600 accounts for its direct sales force, but "anything beyond that, we are channel-ready on," he said.

Cabletron is also building another avenue through which customers can buy the company's products: a Web site. The electronic commerce site will work much the same way Cisco's has. "We're shamelessly stealing from our competition," Reed said. Cisco has reportedly sold nearly $2 billion worth of goods over the Internet since October 1996.

Reed also is not above following Cisco's example of acquiring companies to fill in product gaps.

"We're looking for companies in the area of remote access and applications for Spectrum because we need to get to the market quickly [in this area]," he said.

Additionally, Cabletron is interested in investing several million dollars in start-ups, though not necessarily buying the companies outright, Reed said.

"[The Chase Manhattan Bank] is now our banker of record," he said. "They're helping us do the start-up scan so that we can figure out what the right emerging technologies are."

Perhaps the most visible change for Cabletron will be in its marketing and branding strategies. For the first time, the company has hired an outside ad agency, Donino, White and Partners, of Atlanta. As a result, expect to see Cabletron ads where you've never seen them before. ■

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Backspin

Facing facts: We're digital mechanics

After last week's column on how Microsoft could be challenged by forming a consortium called Antisoft to promote Linux, I got some very interesting letters (although your response to the PDF column was amazing . . . I think we'll revisit that topic next week).

A number of you raised the issue of how much expertise you need to run Linux. Well of course that's one of the key issues Antisoft would have to address.


Mark Gibbs

But a couple of you raised a related issue. To quote a faithful reader (we'll call him FR for brevity): "I feel that if you can't maintain your own machine, you have no business using it. But the general commercial population mainly consists of these very people."

Boy, does this miss the point! Let me spell it out — computers are there for us, not us for them. If a user has trouble maintaining the machine or making it do what he wants, then the machine, not the user, needs to be improved.

FR's viewpoint is a common IT take on the world. Let me characterize that view for you: users are stupid, they do dumb things, can't read manuals and exist just to make more work for the IT group. You know the type of joke: "It would be a great network but for the users."

Now let us get some perspective on this. The PC that we know and love emerged in 1981, a mere 17 years ago. Today it's a business tool that is a prerequisite for many business operations.

Just consider how far we've come. When I got into the network business a couple of years prior to that (God, that's nearly 20 years ago!), a top-end microcomputer was based on a Z80 running at 4.77 MHz, and if you had 64K bytes of RAM you had more memory than you knew what to do with. And if you had a 10M-byte disk drive (which sounded like a Learjet when it started), you were in heaven.

CP/M was the industry-standard operating system, and networking was the bleeding edge of the business. I worked for the U.K. side of Digital Microsystems, Inc., an Oakland, Calif., firm that was eventually acquired by a British company — anyone remember it? Anyone know what happened to John Torode, the founder? We had one of the first real networks — HiNet. It only ran at 256K bit/sec, but wow! It was hot. But I digress.

What you get today for the same price as that "hot" machine back in 1981 is, in comparison, a monster! Many of us consider that a reasonably configured machine today is a 200-MHz Pentium Pro with 64M bytes of RAM. Anything less than a 4G-byte drive induces feelings of claustrophobia. My, but how times change.

It has been said that if cars had evolved at the same rate as computers, they'd cost $10, get 10,000 miles to the gallon and travel at 1,000 miles per hour. Of course, they also would occasionally explode for no reason, killing everyone on board.

So here we have these incredibly powerful machines running software that hasn't really evolved as fast as the hardware, and we're using them for serious business purposes that, on the whole, we don't really understand. And some of us think that users should be able to fix and manage their monstrous machines? That's ludicrously optimistic and naive.

Do you fix your own car? Sure, if it's an old Chevy truck or old BMW. But anything more modern and you probably won't bother . . . you'll go to an expert who has the right equipment and knows how to diagnose a problem. Perhaps if we came to think of ourselves as digital mechanics, we might develop a more useful and pragmatic approach to our users.

So whether or not we manage to create Antisoft and produce a product that end users can really use, perhaps we should first re-think our attitude toward those we serve — that's the users, not the computers.

Quips to nwcolumn@gibbs.com or (800) 622-1108, Ext. 7504.

'Net Buzz

The latest on the Internet/intranet industry

By Chris Nerney

TALKING 2WAY'S LANGUAGE Hot on the heels of a $3.75 million venture capital deal, a Seattle-based start-up this week will release its first product, a corporate communications software package designed to combine the best features of e-mail and groupware.

2Way Corp.'s 2Way Enterprise Suite allows corporate workers to create customized information files that can be transmitted via e-mail or posted on an internal Web site, according to **Dave Clark,** a product manager for the company.

These 2Way files enable employees to interact with each other via prompted responses, fill-in-the-blanks or text. The 2Way files can be distributed via e-mail or posted on an internal Web site, and the product presents responses to the author in a graphical report.

2Way officials say the software can be used for customer satisfaction assessments and sales promotion presentations to customers, as well as sales force and employee testing and training, among other things.

The software includes Web servers, databases, a server-side administration tool, an authoring application and system resource allocation management software. End users and respondents can access 2Way sessions with a browser.

Pricing for the product starts at $25,000, Clark says.

The funding round was the first for 2Way, which was founded in January 1997. Investors included **Hambrecht and Quist, Adobe Ventures II, Voyager Capital** and a group of private investors in Seattle.

YES, BUT IT'S RIGGED SO THEY'LL ALWAYS LOSE Showing that it can be cooperative when it wants to be — or when it doesn't really count, anyway — **Microsoft** plans to allow users of **Netscape's** Communicator 4.0 browser to play in its **Internet Gaming Zone** by next spring.

The Internet Gaming Zone is a Microsoft Web site (www.zone.com) offering a mix of free and fee-based video games. The site attracts young layabouts and network professionals whose superior job performances have burdened them with vast amounts of excess time during work hours.

In a prepared statement, Microsoft said the decision to support Netscape's arch-rival browser was made "in response to customer demand."

Gee, is that all it takes? Someone should clue in the thousands of applications developers who have pleaded with Microsoft to fully support Java standards.

A FUNDING FIRST A start-up touting "non-intrusive" applications management software for entire enterprises has scored $4.5 million in venture funds from several investors.

FirstSense Software, Inc. plans to unveil its debut product in the second quarter. Company officials say that unlike applications management products requiring embedded agents, FirstSense's software requires no modification to the applications.

This eliminates the problems caused by "tinkering" with applications, FirstSense officials say.

Company officials also said that the software can monitor the performance of applications running on corporate intranets and extranets.

The target market for the software will be financial institutions and telecommunications product manufacturers. Pricing information is not available.

The $4.5 million funding was the initial venture round for FirstSense, which was founded in August 1997 by Chief Technology Officer **Neeraj Agarwal.**

Partners in the investment are **North Bridge Venture Partners, Matrix Partners** and **Atlas Venture.**

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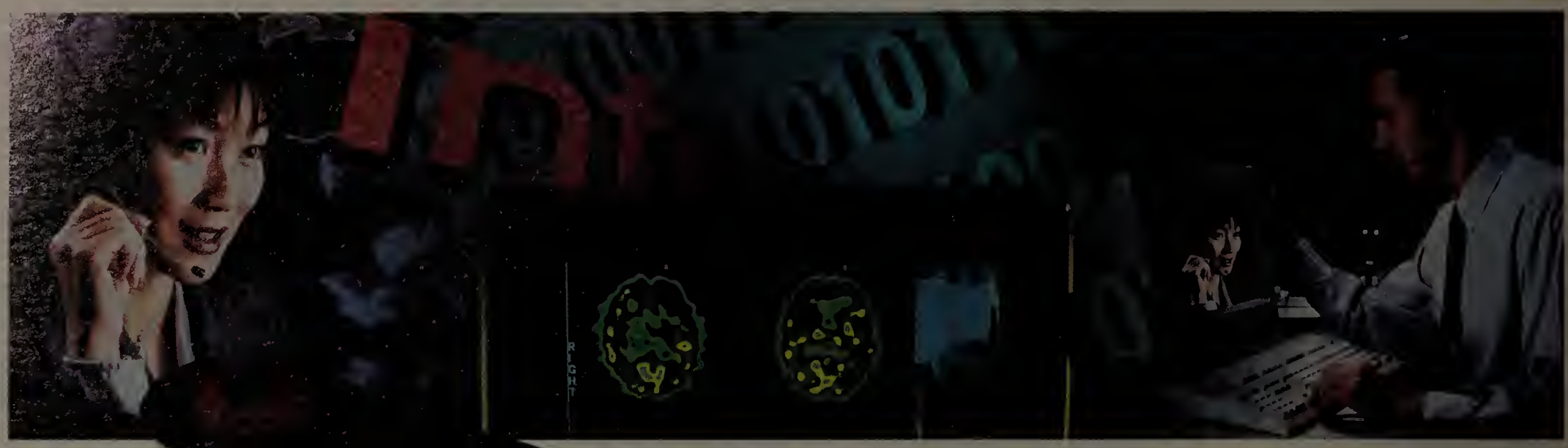

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